

Department of Boost



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**NOT FOR USE WITH POLLUTION
CONTROLLED VEHICLES**

Department Of Boost GT450 Stage III Supercharger Installation Instructions

**These are not officially
sanctioned Department Of
Boost Installation Instructions**

If there are aspects that you do not understand the DOB customer base has solutions for you. Get on the DOB forum and start asking questions.

These instructions are written for an installation on a stock 2005-2010 Mustang GT. If your car is modified or has other aftermarket parts on it you will need to work around those and in some cases find your own solutions.

DISCLAIMER: Department Of Boost is in no way responsible for the content of these instructions. You are choosing to use these instructions AT YOUR OWN RISK.

Applications

2005-2010 Ford Mustang GT with 4.6L 3V engine

Important Notes

Understand what you are doing before you jump in:

Before installing your DOB GT450 Intake Manifold kit, read through the entire installation procedure and check to make sure all the kit parts are present. Email/contact the DOB customer network on the DOB forum or email Department Of Boost (DOB)

at departmentofboost@yahoo.com with any questions regarding the fit or instructions that are unclear to you.

Tune/Computer Calibration:

The DOB Stage III kit does not come with a calibration ("tune"). You will need to have your local tuner do a complete dyno tune on your car once installation and testing are completed. Some supercharger kits come with tunes. However, they are adequate at best. They are set up extremely safe and "soft" to protect the blower manufacturer from liability. Supplied tunes NEVER perform as well as a dyno tune done to your particular car by a reputable tuner. For maximum performance and reliability a custom dyno tune is recommended.

Glossary of Terms

Abbreviation	Definition
BV	Supercharger Control Bypass Valve. A vacuum control solenoid that prevents boost from being made at idle or part throttle operation which reduces heat buildup and noise.
CAI	Cold Air Intake. The CAI is a "system" comprised of everything from (and including) the air filter to the throttle body.
CMCV	Charge Motion Control Valve (located on the back of the stock intake manifold. This feature is not used with the DOB/GT500 SC).
DS	Driver's Side
ETC	Electronic Throttle Control
EVAP	Evaporative Emissions Management Valve (located on the driver's strut tower)
FRPS	Fuel Rail Pressure Sensor
FT	Frankentensioner, a DOB designed belt tensioner that utilizes two factory belt tensioners
HE	Heat Exchanger. The heat exchanger is located at the front of the vehicle in front of the radiator. It cools the water coming from the supercharger intercooler.
IAT	Intake Air Temperature Sensor (from the factory, this function is integrated into the MAF sensor). However, the DOB setup requires a separate IAT sensor as it is installed into the intake manifold.
IC	Intercooler, the IC is located in the manifold "under" the supercharger and cools the incoming air temperatures.
ID	Inside diameter
MAF	Mass Air Flow Sensor
OD	Outside Diameter
OEM	Original Equipment Manufacturer
PCM	Powertrain Control Module (a.k.a. ECM, ECU, PCU, EEC)
PCV	Positive Crankcase Ventilation
PS	Passenger side
SC	Supercharger
TB	Throttle Body
TPS	Throttle Position Sensor
T-stat	Thermostat
VCT	Variable Camshaft Timing

Parts List

Department Of Boost Manufactured Parts:

- DOB GT450 Manifold
- Thermostat Housing (shipped installed in manifold)
- Supercharger Drive Pulley Hub (If you sent your supercharger snout to DOB you will have received it back with the hub pressed on)
- Supercharger Drive Pulley (In the size/boost selected)
- Front Alternator Bracket
- Rear Alternator Bracket
- Front Alternator Bracket Spacer
- Rear Alternator Bracket Spacer
- Belt Idler Pulley Spacers X2
- Fuel Rail Spacers To Match Your Rail/Injector Combination (These along with their fasteners will be pre-installed on your manifold)
- Fuel rail fasteners will be tailored to your specific application and will be installed on your manifold

*There may be extra fasteners included

OEM GT500 parts:

- OEM GT500 supercharger & elbow
- OEM GT500 throttle body
- OEM GT500 cold air kit
- OEM GT500 heat exchanger
- OEM GT500 47lb/hr Injectors x8
- OEM GT500 intercooler water Pump
- OEM GT500 water pump pigtail
- OEM GT500 blower gasket
- OEM GT500 intake air temp sensor
- OEM GT500 intake air temp sensor pigtail

The Other Parts:

- Aeromotive 340lph fuel pump
- Fuel Rail hose 10ft
- 3/8 crimp style hose clamps x8
- 5/8 crimp style hose clamps x4
- 3/4 crimp style hose clamps x2

- 12AN Twist Tite 90deg hose ends X2
- 3/4-12AN fittings X2
- Degas Bottle
- Hose Clamp Crimper/Pliers
- Idler pulleys x2
- Belt
- 5/8-3/8 reducer coupling x2
- 1/4NPT-1/4 barb
- 1/2NPT-3/4 barb
- 3/4-3/4 barbed adapter
- 5/8-5/8 barbed adapter
- 1/4-1/4-1/4 Tee
- 1/4 vacuum hose 3ft
- 3/8 vacuum hose 3ft
- 5/8 vacuum hose 3ft
- 3/4 heater hose 20ft
- 3/4 hose clamps x9
- Water pump relay
- 18ga wire 25ft
- 18ga butt connectors x25
- 4ga battery cable 2ft
- 4ga butt connectors x4
- Inline fuse holder

If you have a 2005-2006 you will be using these updated cooling system parts:

- 2007-2010 GT lower radiator hose
- 2007-2010 GT "water neck"
- 2007-2010 GT "water neck" O-ring
- 2007-2010 GT "cross over" O-ring/seal

If you have a 2010 you will be using these intake gaskets:

- 2005-2009 Intake gaskets/O-rings X8

If you purchased the optional Stage II Frankentensioner you will get these parts:

Belt Tensioner
Main body spacer x3
Idler pulley end spacer x1
M8x80 HHCS x4

M8 flat washer x3

M8 large diameter flat washer x1

Fasteners and O-rings

SHCS = Socket Head Cap Screw

FHCS = Flat Head Cap Screw (tapered head)

HHCS = Hex Head Cap Screw

Description	Type	Coating	Quantity
M5 x 35	Bolt, HHCS	Zinc	1
M5	Flat Washer	Zinc	1
M6 x 25	Bolt, SHCS	Zinc	10
M6 x 30	Bolt, SHCS	Zinc	5
M6 x 40	Bolt, SHCS		1
M6 x 90	Bolt, SHCS	Zinc	9
M6 x 100	Bolt, SHCS	Zinc	3
M6	Flat Washer	Zinc	32
M8 x 25	Bolt, SHCS	Zinc	1
M8 x 25	Bolt, FHCS	Zinc	3
M8 x 40	Bolt, SHCS (low head)	Black	1
M8 x 45	Bolt, SHCS	Black	13
M8	Flat Washer	Zinc	12
M8	Flat Washer (large diameter)	Zinc	2
1.5" O-ring	O-ring, Gasket	-	1
2.25" O-ring	O-ring, Gasket (comes on T-stat housing)	-	1

READ ALL OF THE **INSTRUCTIONS** **BEFORE STARTING** **WORK!!**

Section 1 **Disassembly**

The disassembly section is very brief. It is simply meant to get you to the DOB manifold installation. If you do not understand or can't figure out how to follow some of the steps please refer to the Ford service manual which can be found online and for free without much trouble.

Label electrical connectors, you will thank yourself later. If possible put fasteners back where they came out of after removing a part, you will thank yourself later.

Parts highlighted in **blue** will be re-used. Set aside.

- Release the fuel system pressure (Ford service manual section 310-00)
- **Disconnect and remove the battery**
- **Drain engine coolant**
- **Remove PVC vent tube/breather from PS valve cover and CAI**
- Remove CAI
- Unplug MAF
- **Remove MAF from airbox**
- Remove airbox
- **Remove PCV line from PS valve cover and intake manifold**

- Disconnect line from EVAP solenoid on DS shock tower at intake manifold
- Unplug and disconnect vacuum line from FRPS on PS fuel rail
- Remove FRPS
- Disconnect fuel line at DS fuel rail and DS fender below brake booster (if you do not have the correct fuel line disconnect tool you can simply use a razor blade and cut the line off of the two connectors). See assembly section for what fuel line fittings to re-use.
- Disconnect the alternator to battery cable (the big one) from the battery and alternator and remove
- Remove fuel rails and injectors. See assembly section about re-using the fuel rails
- Remove fuel injectors from fuel rails
- Unplug CMCV connector on back of intake
- Disconnect brake booster hose from back of intake
- Remove 10 intake manifold bolts and remove intake
- Cover the intake ports in the cylinder heads with tape to prevent stuff from dropping in them while you are working
- Remove accessory belt
- Remove the idler pulley in the pic below



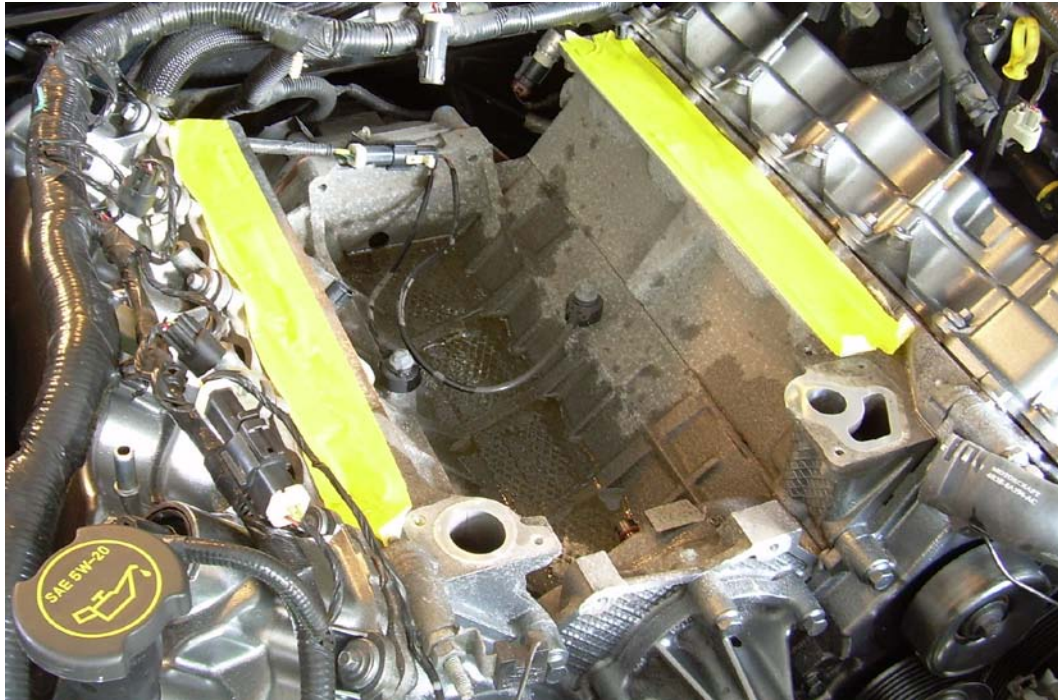
- Remove belt tensioner
- Remove alternator
- Disconnect and remove radiator hose(s) from coolant crossover. 2005-2006 cars have two hoses, 2007-2010 cars have one
- Disconnect heater hose from coolant crossover
- Remove coolant crossover. See assembly about re-use

- If you have a 2005-2006 disconnect the PS radiator hose from radiator and remove. Then disconnect all of the radiator hoses on DS of motor. All hoses between the lower radiator fitting (outlet on DS), the fitting on the block (behind power steering pump) and the DS coolant crossover connection will be removed
- Disconnect upper radiator hose (PS) regardless of year at radiator and remove
- Disconnect rubber heater hoses coming from firewall from the metal heater hose "manifold" located in the valley of the motor/behind the PS cylinder head
- Remove the metal heater hose "manifold"
- Remove upper heater hose where it comes through firewall
- Unplug and remove cylinder head temp sensor (engine temp sensor) from PS cylinder head located in valley of motor. You will not need to plug this hole. See pic below.



- Follow wire/"pigtail" that was connected to the cylinder head temp sensor back to where it plugs in behind the PS head and unplug pigtail
- Remove front bumper cover

When you are done with this section the motor will look like the pictures below (roughly). See pic below



Section 2

Prepping Car For

Manifold Installation

This section will guide you through the steps that need to be done before the manifold is put on the motor.

The heater hoses (the ones that go through the firewall) need to be modified so they will run under the manifold correctly.

****Tool And Clamp Notes****

You have been supplied with some one time use Fragola "crimp Clamps" and a special set of pliers to crimp them. We have found in a lot of situations, especially when you are making permanent line connections that the crimp clamps are not only better, they are easier. And certainly look better. In the following instructions you will see that standard hose clamps have been used in a lot of situations. You will be using the crimp clamps for just about everything except the intercooler hoses (3/4"). So take the below pictures with a "grain of salt". You will be using crimp clamps in a lot of the places where regular hose clamps are pictured.

Step 2-1

Disconnect the upper heater hose from the fire wall. This fitting SUCKS! There are two tabs that need to be depressed while simultaneously pulling (but not hard) on the fitting. This is best done with two people and a couple of pics or really small screwdrivers.

Re-connect the upper heater hose back to the firewall fitting and clock it at about "4:30" so it runs down the DS of the lower fitting. See pic below.



Step 2-2

Using 5/8 heater hose, 5/8-5/8 nipple and hose clamps extend the upper heater hose so it will reach and attach to the fitting coming out of the motor on the back side of the water pump. You will want to trim a little length off of the OEM hose to get it to lay across the bottom just right. Watch out that you do not end up with the section containing the nipple where the two hoses meet (OEM hose and your extension) ends up trapped between the manifold pan and the engine block where it meets the transmission. You want that section in the "valley" of the motor. See Pic Below.



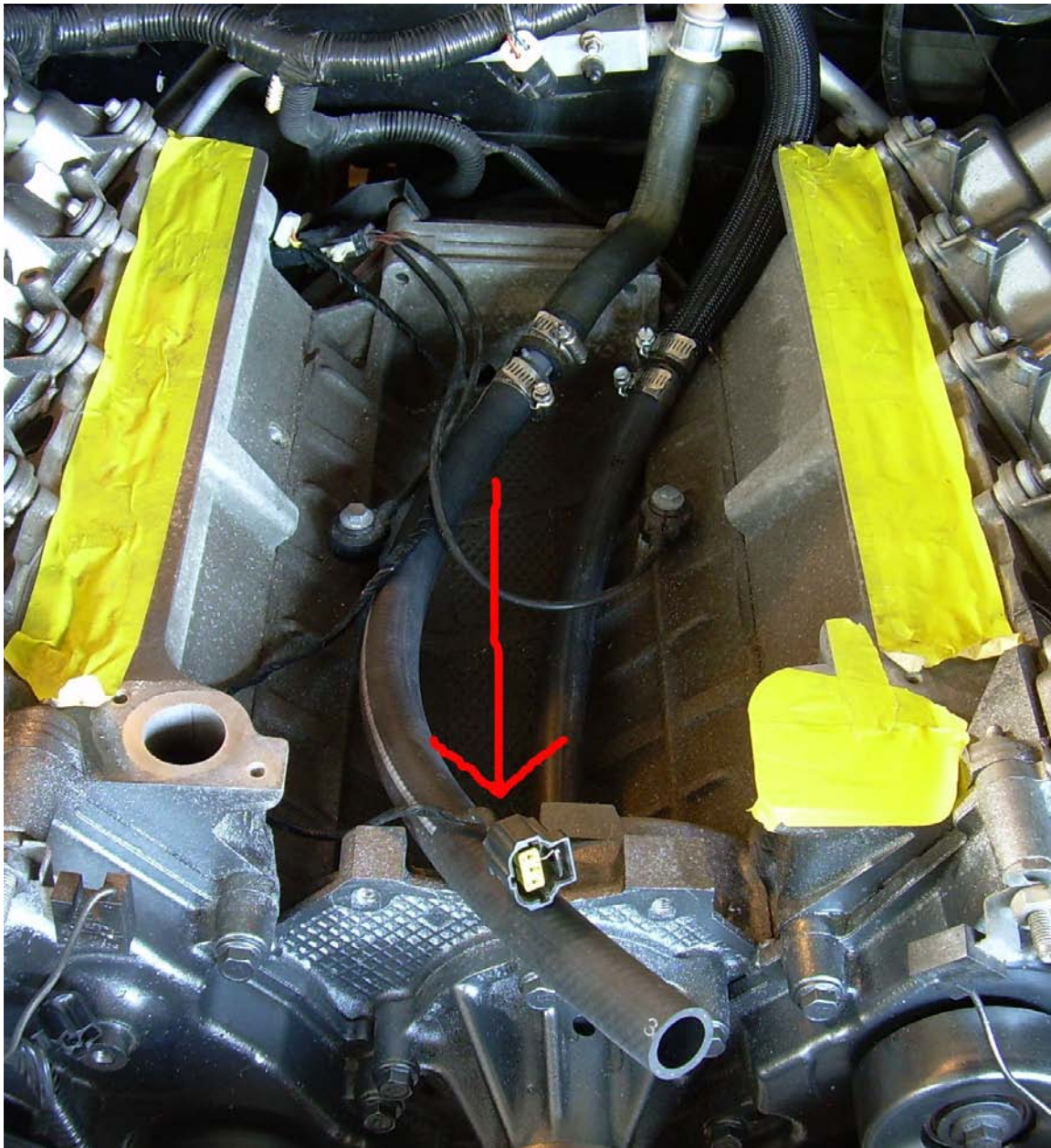
Step 2-3

Using 3/4 heater hose, 3/4-3/4 nipple and hose clamps extend the lower heater hose so it will reach and attach to the fitting coming out of the bottom/front of the manifold. You will want to trim a little length off of the OEM hose to get it to lay across the bottom just right. Watch out that you do not end up with the section containing the nipple where the two hoses meet (OEM hose and your extension) ends up trapped between the manifold pan and the engine block where it meets the transmission. You want that section in the "valley" of the motor. Leave yourself some extra length so when you put the manifold on the motor and hook up the hose it is long enough. See Pic Below.



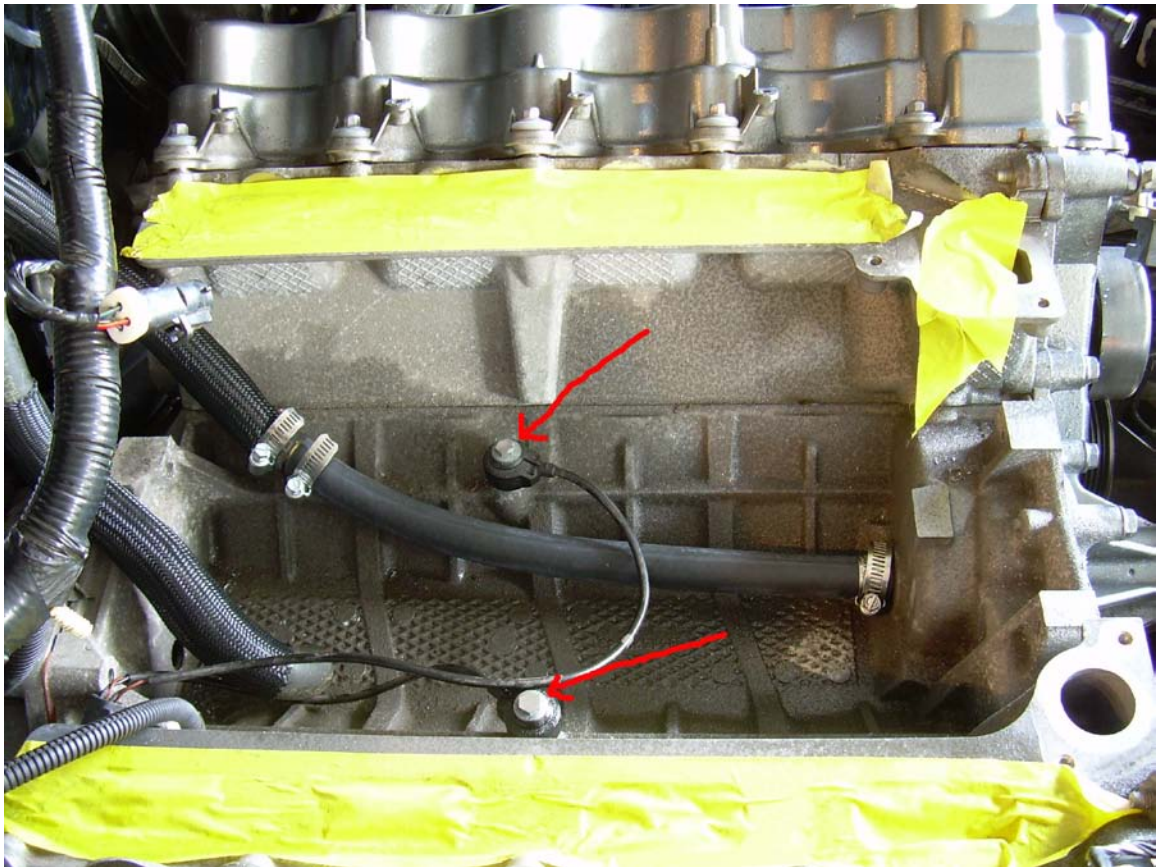
Step 2-4

Find the pigtail that connected the Cylinder Head Temp Sender (which will now technically be a water temp sender) to the wiring harness behind the PS cylinder head. Extend the pigtail 10in by splicing in more wire so it will reach the new location of the temp sender at the front/bottom of the manifold. Plug the extended pigtail back in at the connector located at the rear of the PS cylinder head (where you unplugged it). Run the pigtail down the valley of the motor and drape it over the front of the block so you can get to it once the manifold is on. See pic below.



Step 2-5

Using a grinder/Dremel/file/etc shave down the bolt heads that bolt the knock sensors to the block. You want to shave about 50% of the head off to provide as much clearance as possible for the pan on the bottom of the intake. If for some very rare reason something were to get in between the knock sensor bolt and the pan which caused them to contact the ECU will pull ignition timing which will hurt HP. This step is not rocket science, just grind the heads down until you have just enough left to get a wrench on them in case you have to remove them some day. See knock sensor bolt location in pic below.



Step 2-6

Using a grinder/Dremel/file/etc (we used a file) shave the edge off of the front DS cylinder head by the water passage for manifold pan clearance. Like the step before this is not rocket science. Your goal is to remove enough material so the manifold will sit flat on the heads. The pics below will give you a good idea what you want to accomplish. At the end of the day as long as the manifold will sit flat on the cylinder heads and you can line the bolt holes up you removed enough

material. Please note that in the pictures below the ports in the cylinder head are not sealed up like they should be (the heads in the pic are "scrap" test units). You DO NOT want any shavings in there. See pics below.



Section 3

Prepping Manifold

This section will walk you through the steps that need to be completed to the manifold before it is installed on the motor.

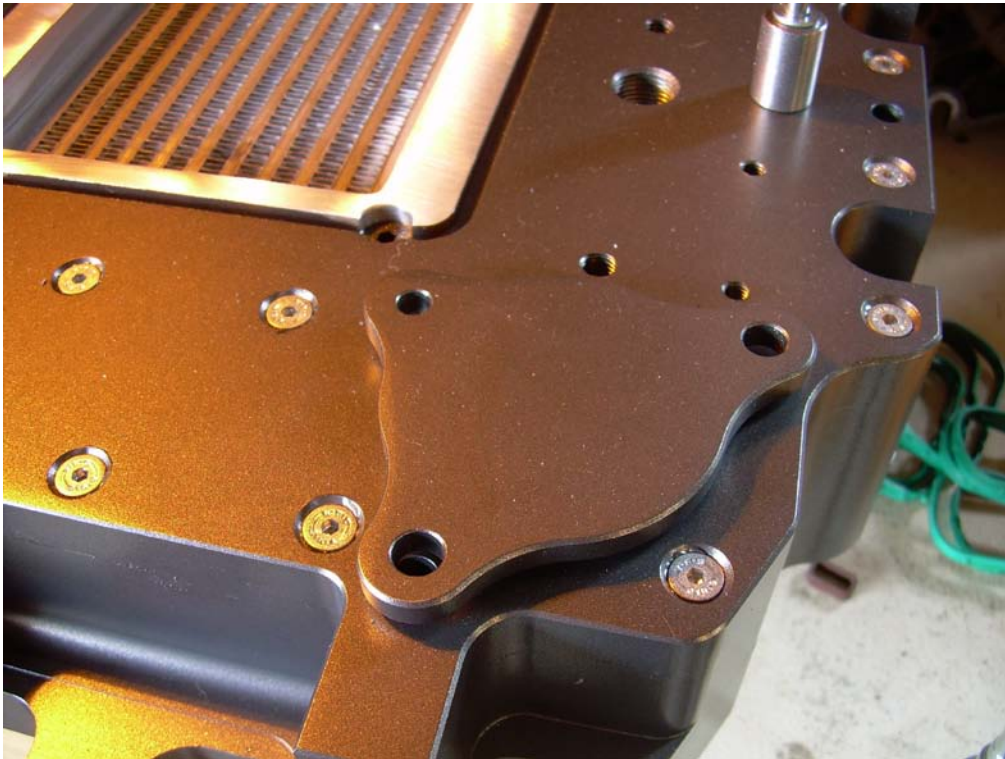
Step 3-1

Unpack manifold and remove duct tape. Inspect all ports to ensure that there is no debris in them (and make sure you don't get any in later too).

Thermostat And Water Neck

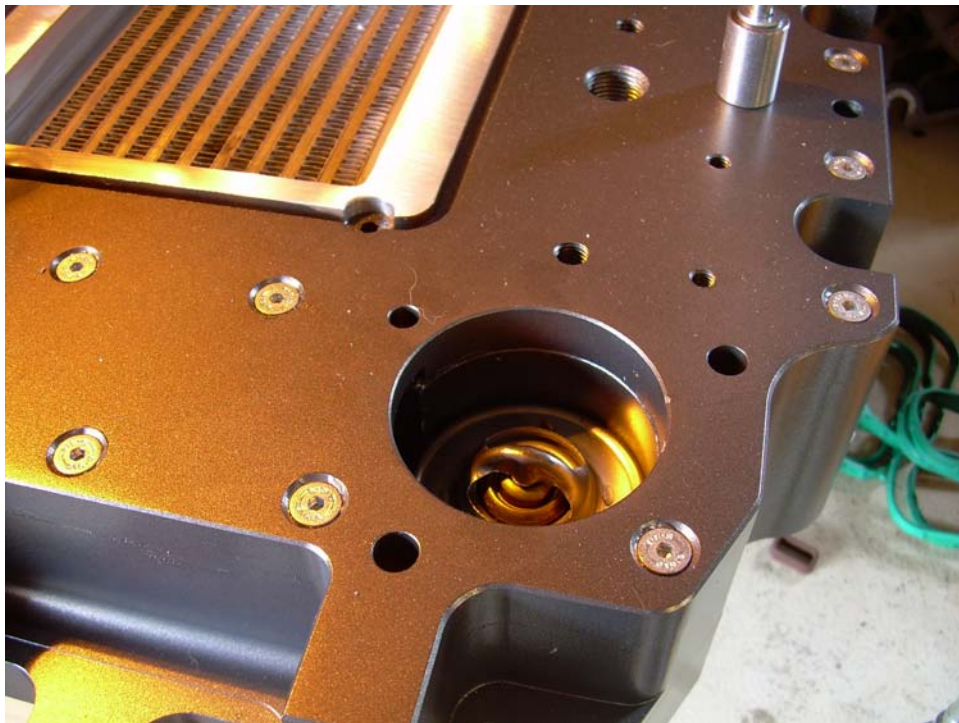
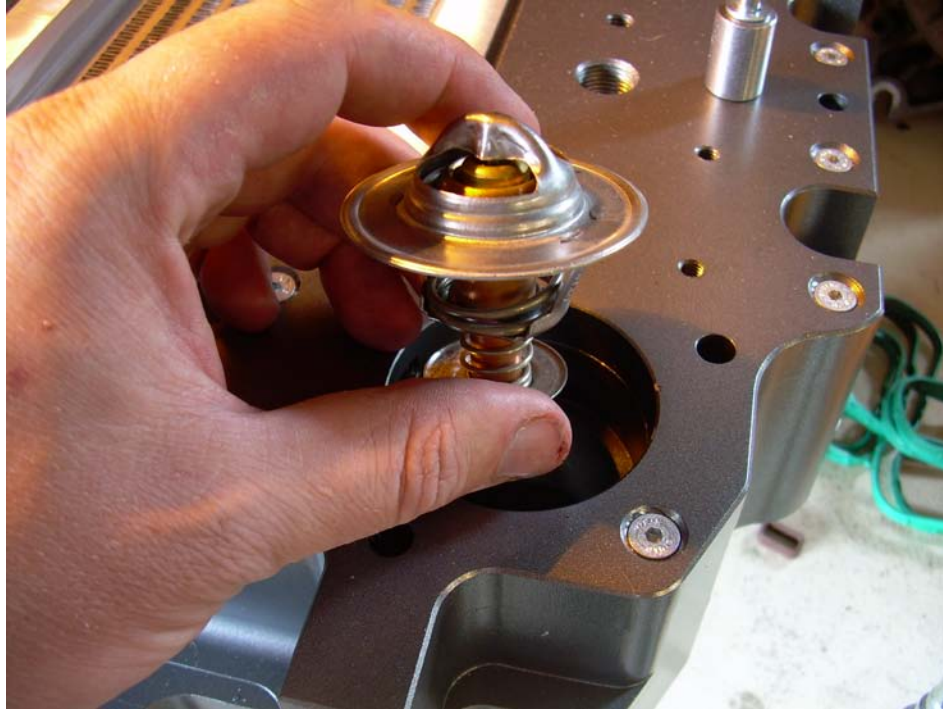
Step 3-2

Remove thermostat housing from manifold. See pic below.



Step 3-3

Install a 2007-2010 thermostat in the manifold with the “pointy” end facing up (the only way it will go in). See pics below.



Step 3-4

Install thermostat housing in manifold. Before installing lube up the O-ring on the housing to prevent tearing. You will not be using a O-ring or gasket on the thermostat itself. The housing only lines up one way, you can't clock it wrong. See pics below.

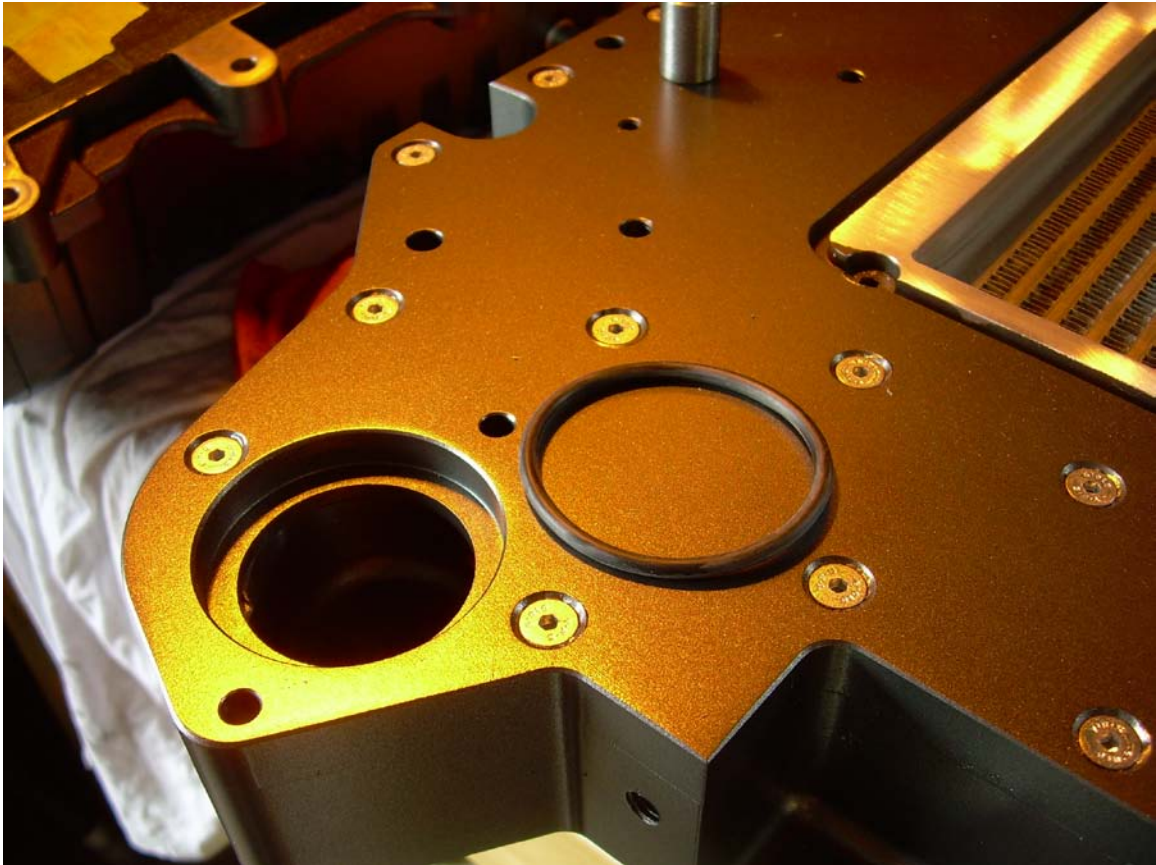


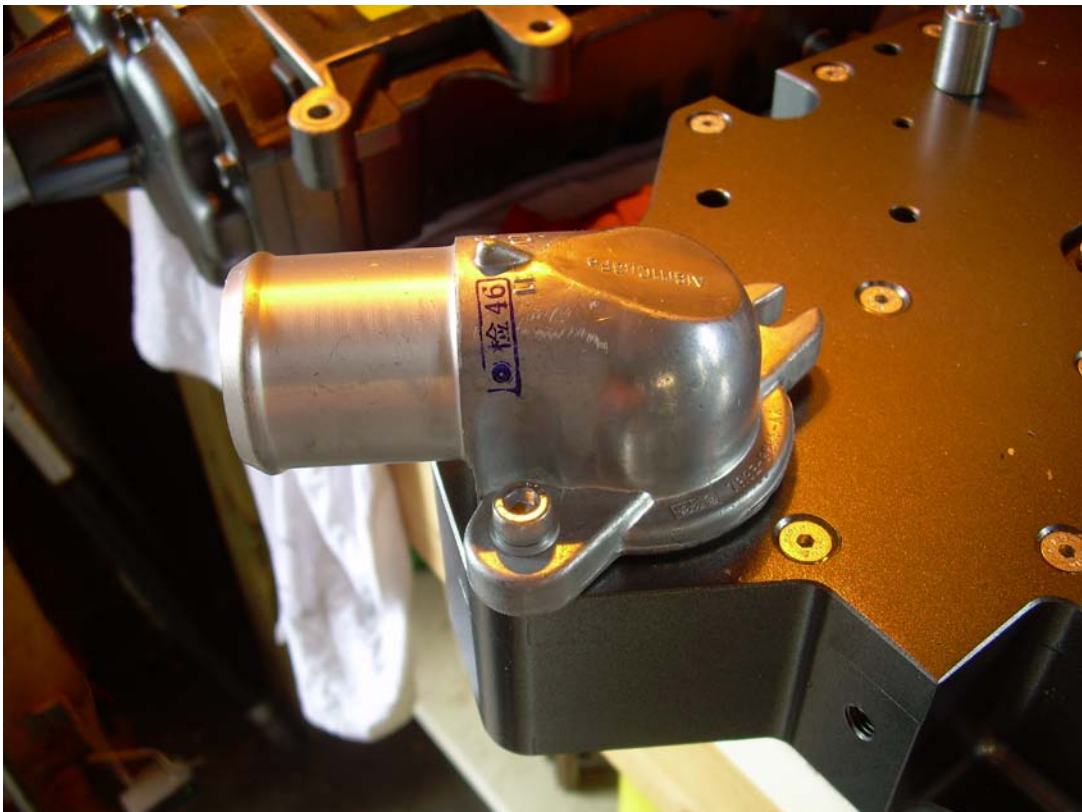
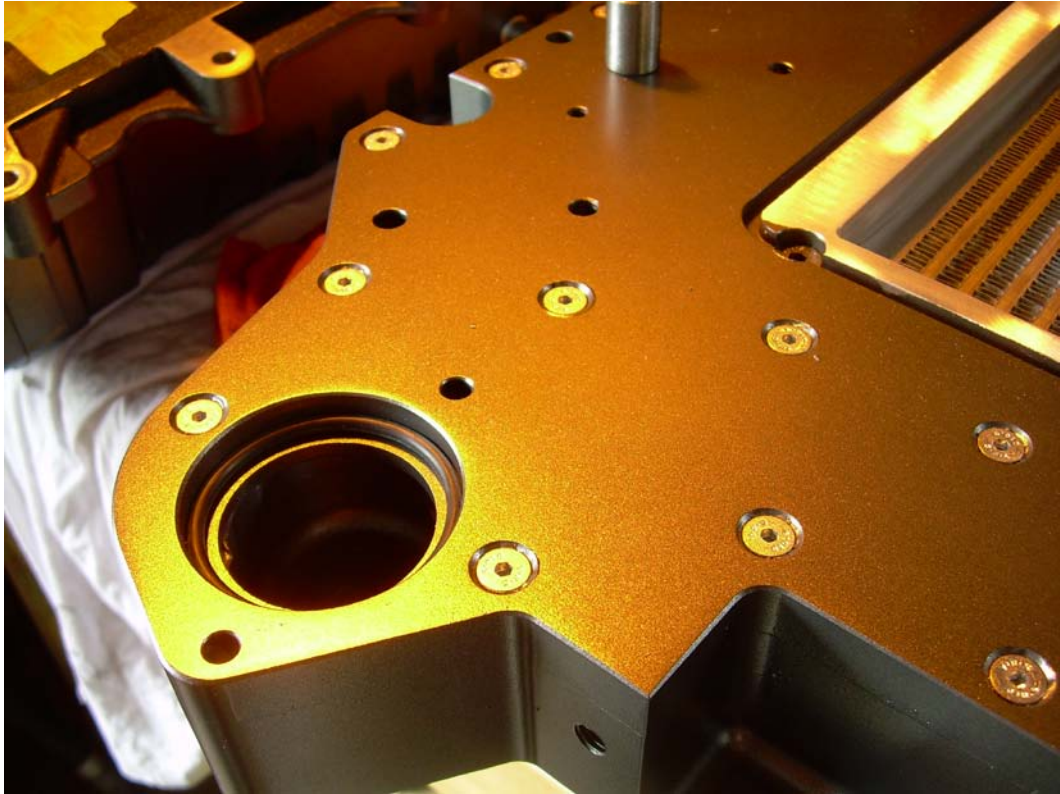
Step 3-5

Using the supplied M6x30 SHCS and washer bolt the thermostat housing to the manifold through the smaller (diameter) of the three holes. You will be using the two larger holes in the thermostat housing later.

Step 3-6

Using a 2007-2010 OEM water neck and water neck O-ring install the water neck in the manifold. Don't forget to lube the O-ring first. Fasten the water neck to the manifold through the front bolt hole using the supplied M6x40 SHCS and washer. DO NOT tighten the bolt down any harder than finger tight. You will tighten it down all the way after you put the manifold on. See pics below.





Intercooler Fittings

We do not have pictures of the fitting install (we need someone to take them). We just started using these nicer/easier fittings. So the following instructions will be sans pictures. But they are super easy and you can't do it wrong.

It does not matter which port you use as the input/output. The water can flow through the IC either direction.

Step 3-7

Flip the manifold upside down so you can get to the threaded holes in the intercooler easier. See pic below.



Step 3-8

Using the following fittings:

- 3/4NPT-12AN fittings x2

Install the 3/4NPT-12AN fittings into the intercooler ports. You will be inserting the 3/4NPT end of the fitting into the intercooler (the tapered threads). Use Teflon Pipe Dope or tape on the threads. You don't need to reef these down.

O-Rings/Gaskets

For the most part you will be re-using your OEM gaskets. When re-using O-Rings be sure to clean them first (dish soap works fine) then lube them appropriately.

Step 3-9

Locate your 07-10 blue “triangular” shaped O-Ring. If you have a 07-10 car it will be in the stock coolant crossover. If you have a 05-06 car you bought one. If the O-Ring has a locating tab (about 1/8” long) sticking out of it that does not match up with the manifold cut the tab off with a razor blade. Put O-Ring in the matching groove located on the bottom of the manifold. See pic below.



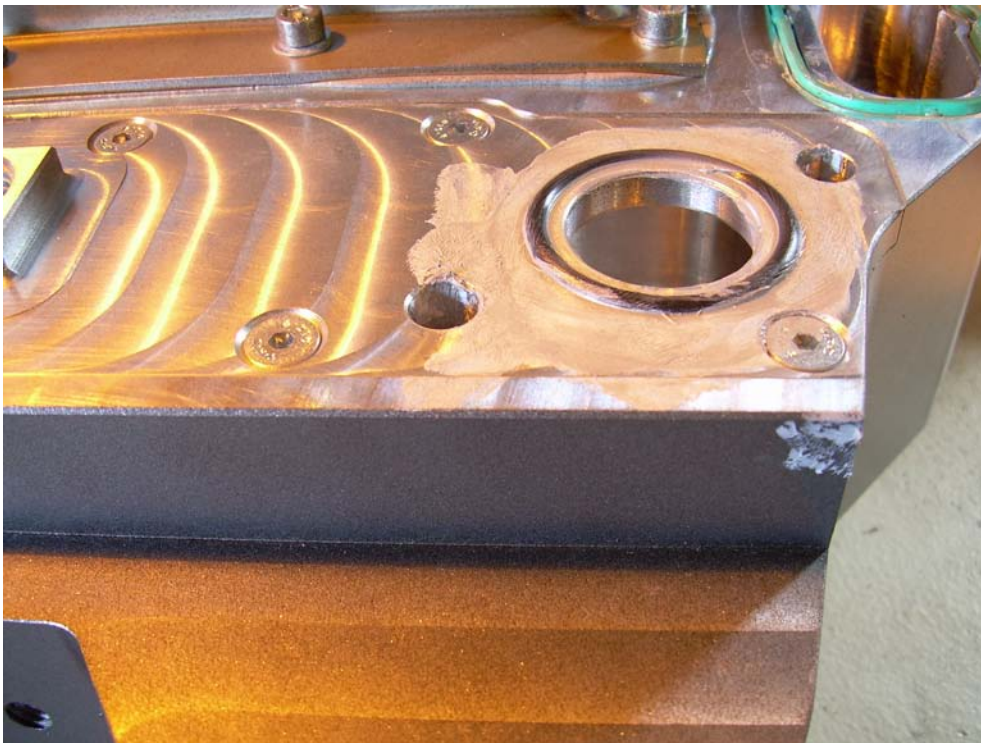
Step 3-10

Locate your 05-09 green “oval” shaped intake port O-Rings (8 of them). If you have a 05-09 car they will be in the bottom of your stock intake manifold. If you have a 2010 car you bought them. The O-Rings have locating tabs on them that need to be trimmed with a razor blade. Lube O-rings. Install all 8 O-Rings in their matching grooves in the bottom of the intake manifold. See pics below (there is only a pic for one side, just do the same thing on the other one).



Step 3-11

Use the 1 1/2" black O-ring (there will be an extra) that was supplied with the manifold. Use a little dab of RTV, glue, etc to "glue" the O-ring into its matching groove at the front of the manifold. You can do this without gluing the O-ring into the groove but sometimes it likes to sneak out when placing the manifold on the motor, gets pinched and then leaks. You are not using the RTV as sealant, just "glue", so you don't need to go bonkers with it. See pics below.



Temperature Sender And Heater Hose Fitting

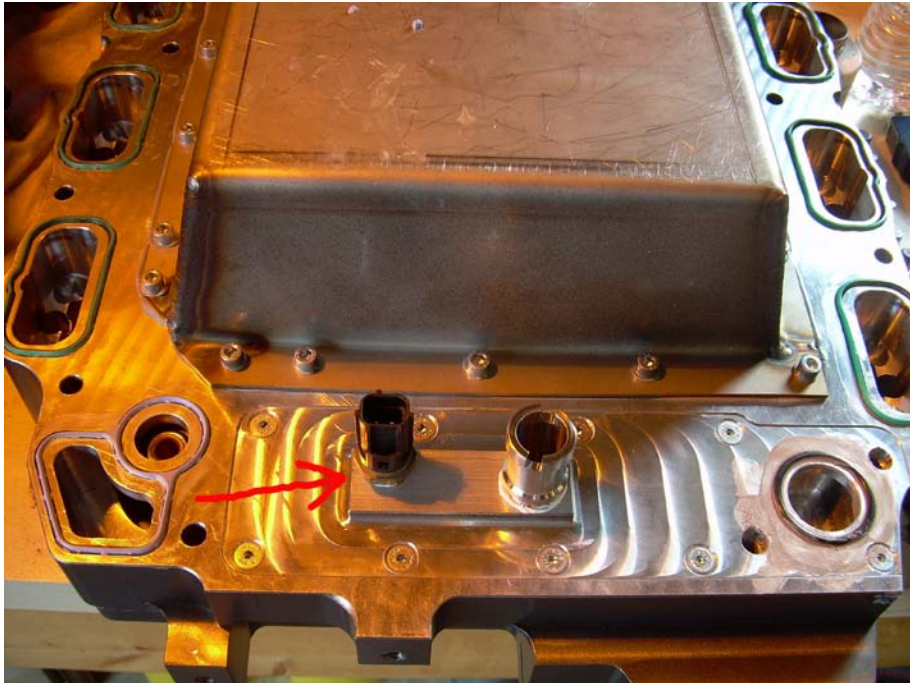
Step 3-12

Re-use the Cylinder Head Temperature sender that you removed from the PS cylinder head during the disassembly process. See pic of sender below.



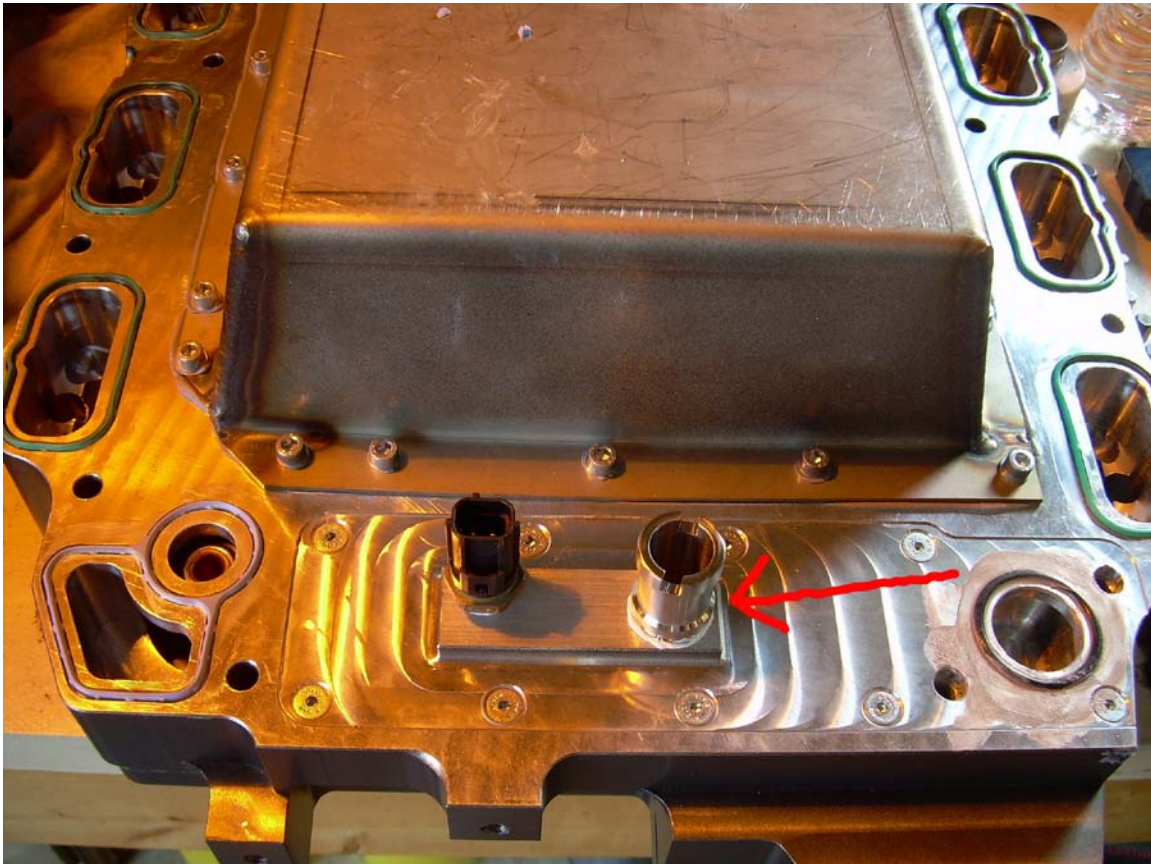
Step 3-13

Screw temp sender into it's new location in the bottom/front of the manifold. Use Teflon Pipe Dope on the threads and sealing surface. Tighten to 79in.lbs. (about 7ft.lbs.). These sensors are very delicate, be careful! See pic below for location.



Step 3-14

Screw the 1/2NPT-3/4 Barb fitting into its new location in the bottom/front of the manifold. Use Teflon Pipe Dope on the threads. See pic below for location.



Section 4

Installing Manifold

This section will walk you through the steps that need to be completed to install the manifold on the motor.

Step 4-1

Thoroughly clean all surfaces where the manifold interfaces with the motor. Depending on how many miles are on your car you may have some oxidation on the cylinder heads around the intake ports. There are lots of ways of cleaning everything up but Brake Parts Cleaner and a Scotch Brite pad probably work the best. Keep in mind these mounting surfaces are where all of the O-rings on the bottom of the manifold seal too. A good seal is very important, this is not a step to do anything less than 100%. "Plug" the intake and cooling ports with paper towel, rags, etc and get cleaning.

Step 4-2

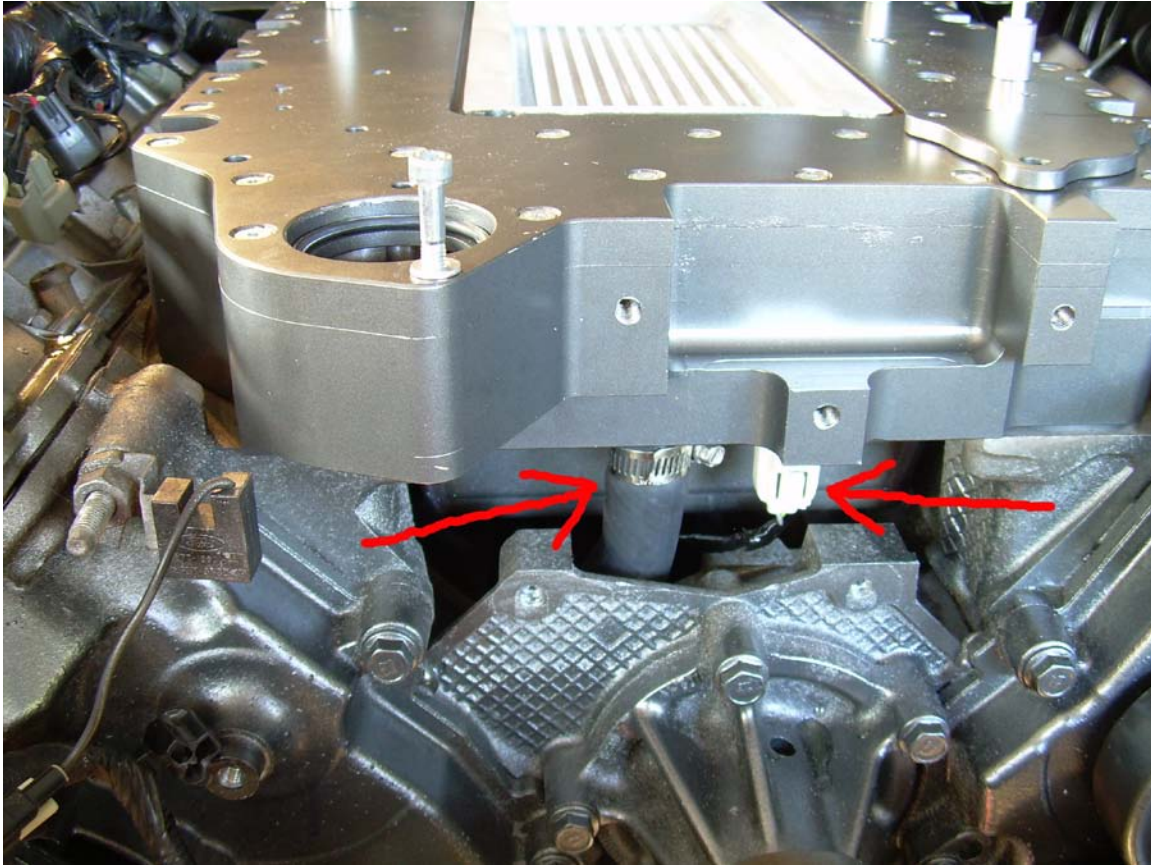
Make sure all O-rings are lubed correctly

Step 4-3

Test fit manifold on motor to ensure that it sits flat on the cylinder heads, the IC fittings clear, bolt holes line up, etc. If it doesn't fit figure out what is preventing it from fitting and fix it. You may find you need to file the driver's side cylinder head a little more. If it fits you can leave the manifold in place.

Step 4-4

Hook up the heater hose you made and the temperature sender pigtail you extended at the front of the manifold. It is easier to hook them up if you lift the front of the manifold a little and put a roll of paper towel, a clean rag, etc between the manifold and cylinder head(s). See pic below.



Step 4-5

Locate the supplied intake manifold to motor fasteners. See pic below:

M6 x 90	Bolt, SHCS	Zinc	9
M6 x 100	Bolt, SHCS	Zinc	3
M6	Flat Washer	Zinc	12



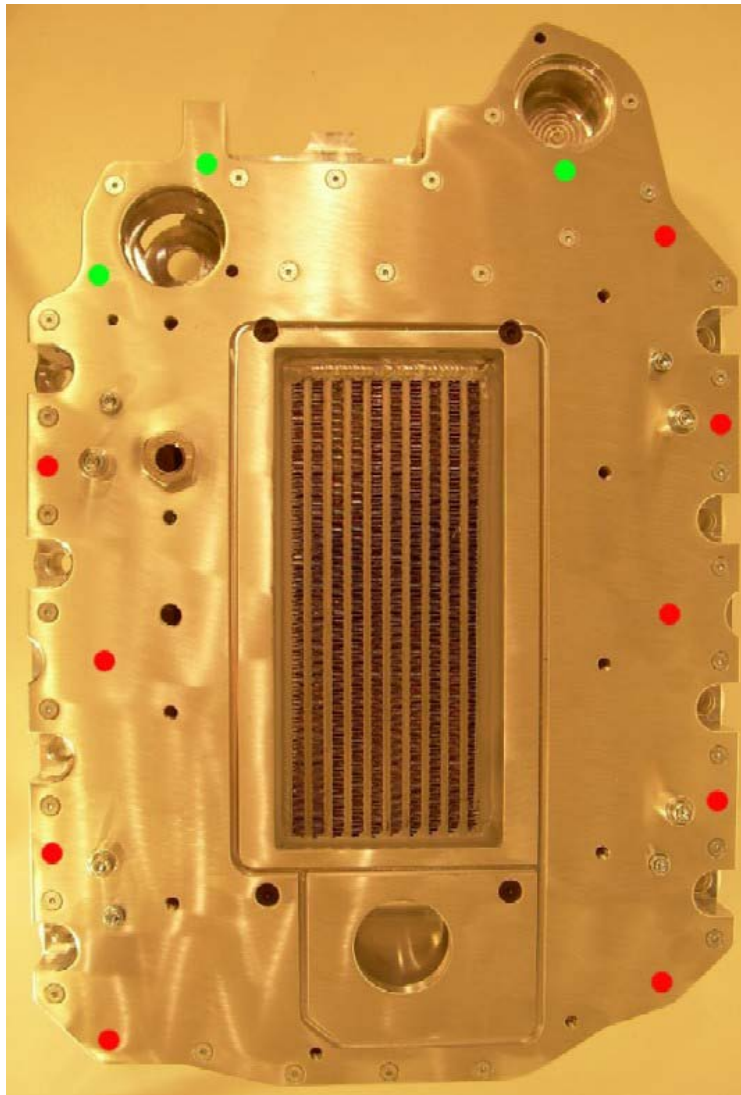
Step 4-6

Using the picture below as a guide put the appropriate fasteners in their correct locations FINGER TIGHT so you can torque the manifold down. You may have to slide the manifold around a tiny bit for the holes to line up. This is normal.

The holes marked in **red** take the M6x90mm bolts (total of nine)

The holes marked in **green** take the M6x100mm bolts (total of three).

*Note that in the picture below the thermostat housing and water neck are not pictured. You will have already installed these. The three bolt locations marked in green will go through the water neck (one bolt) and the thermostat housing (two bolts).



Step 4-7

Torque down manifold.

Starting from the center of the manifold and working your way out toward the ends in a criss cross pattern (kind of like you would a wheel) torque the M6 bolts that you just installed in three steps.

These torque numbers are in **INCH POUNDS** (in/lb), not foot pounds (ft/lb). If you tighten them down in ft/lb you will pull the threads out of your cylinder heads and will not be happy. For quick reference there are 12 in/lb in 1 ft/lb. If you have a torque wrench that goes down to lets say 20 ft/lb it will be "too big". The manifold can be torqued down without using a in/lb torque wrench, but it is not for the inexperienced or faint of heart.

First step- 25 inch pounds

Second step- 50 inch pounds

Third step- 79 in/lb

After the third step it is not a bad idea to go back through each fastener at 79 in/lb to make sure they are all torqued down correctly. As you tighten them down the others tend to loosen up if you don't "chase" it a few times.

Now tighten down the front water neck bolt you put in finger tight earlier. 79in lb will do it.

Section 5 Prepping & Installing Supercharger

Step 5-1

Tape up/seal openings in supercharger (you should have been storing it like this anyway).



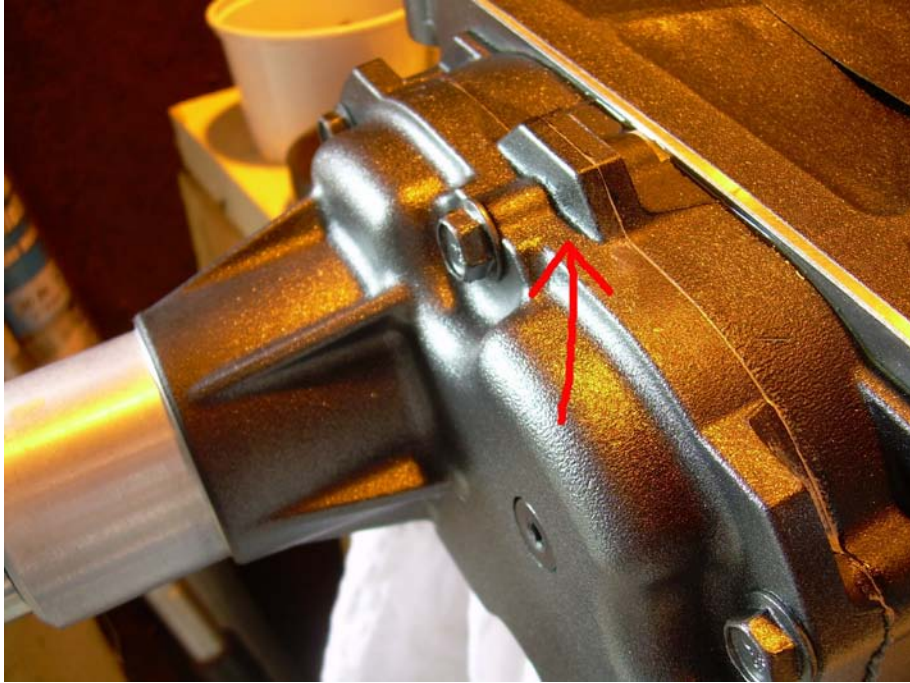
Step 5-2

Remove OEM locating dowels from supercharger.



Step 5-3

Using a hack saw, file, Dremel, etc remove this protrusion from the bottom of the supercharger.

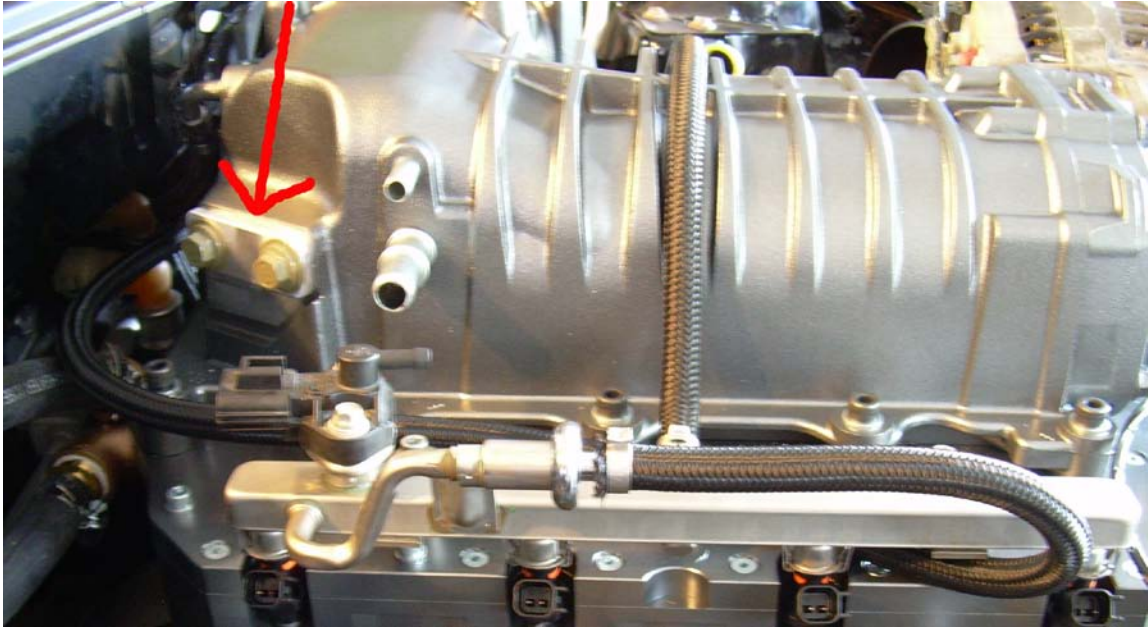


So it looks like this.



Step 5-4

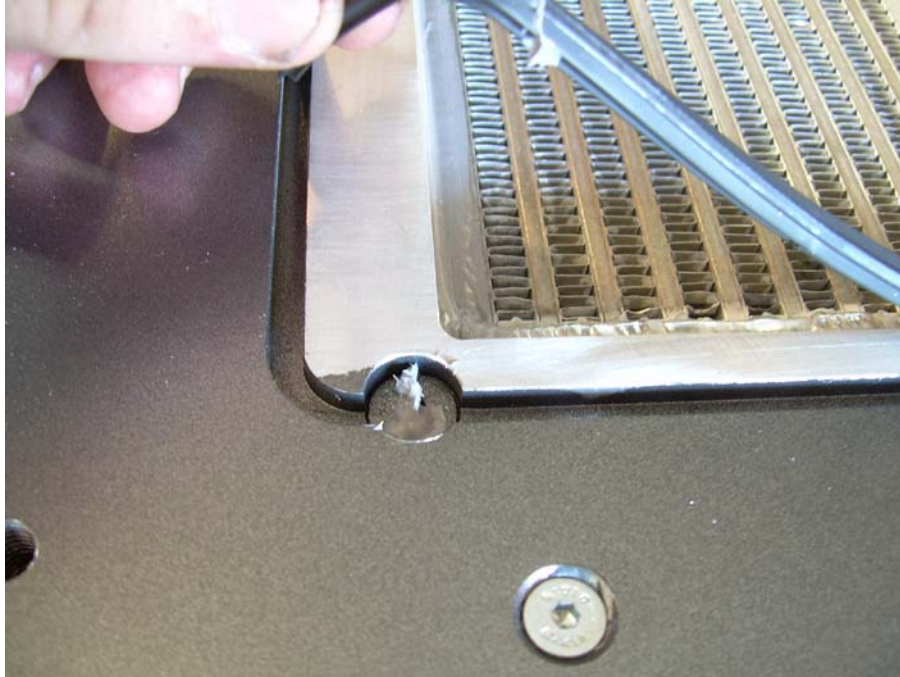
GT500's use an old school EGR setup (exhaust gas recirculation) that the GT's don't. There is a port on the GT500 blower for the EGR tube to hook up to that needs to be blocked off (see pic below).



The picture shows the port already covered. There are two ways of covering the port. You can simply find a piece of aluminum, drill two holes in it for the bolts, put a skim coat of RTV on and bolt it down. It will be permanent. The one pictured was made from a piece of scrap in about 5min. You can also buy a block off plate for this location. Word on the street is someone on eBay is selling them cheap. Either way when you are done it needs to be sealed air tight.

Step 5-5

Put a dab of RTV on the bolt heads (there are two) that are under the supercharger O-ring/gasket.



Install OEM GT500 supercharger O-ring/gasket in its groove. O-ring lube or a very light coating of grease will make seating the O-ring a LOT easier. Note in picture the O-ring is not seated all the way.



5-6

Locate the M8x45 SHCS and M8 washers. Put a small amount of RTV on the threads.



5-7

Put the blower on the intake manifold and line up the bolt holes by eye.

5-8

Install the 10 M8x45 SHCS and washers through the blower feet into the manifold and tighten them down FINGER TIGHT.

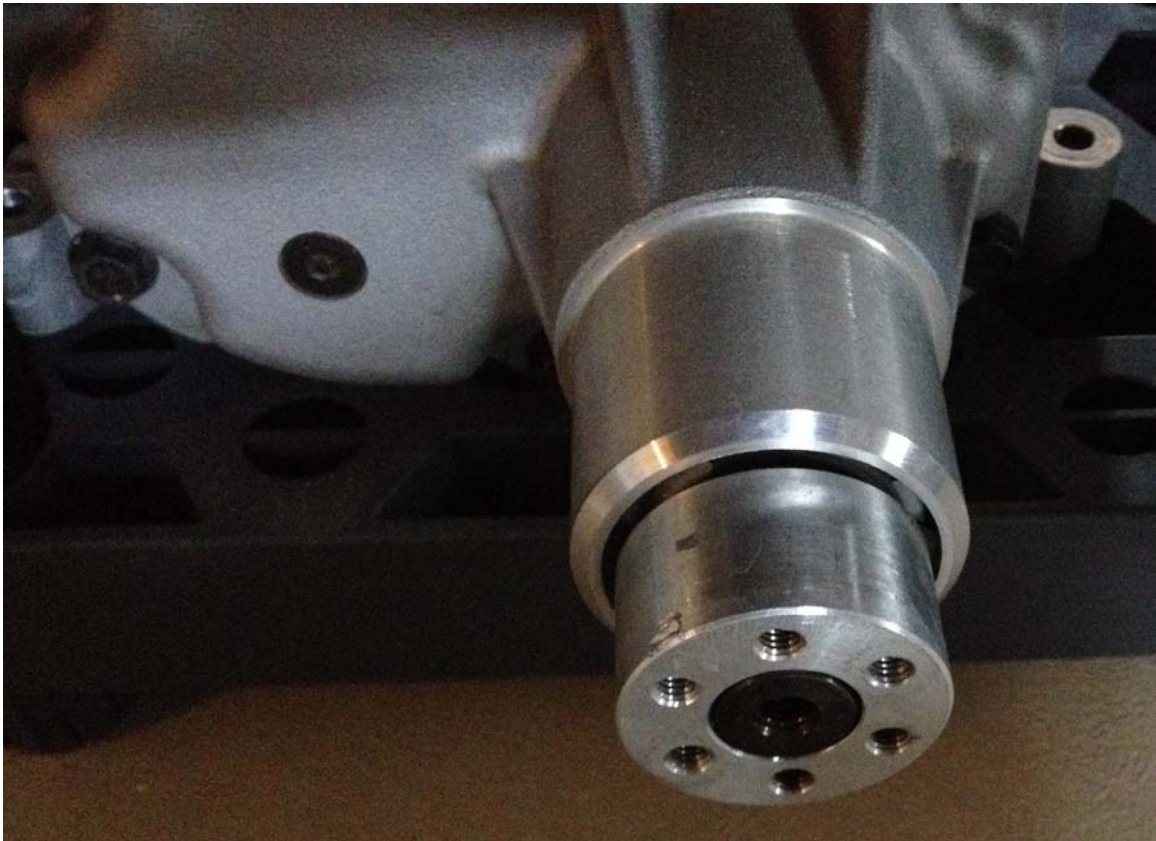
5-9

Torque supercharger to manifold bolts (10 of them) down to 15 ft/lb in a crisscross pattern.

5-10

Install Supercharger Pulley On Supercharger

Your supercharger should already have the aluminum Department Of Boost pulley hub already installed on it if you have a Stage II or Stage III kit. If it isn't please contact us. It looks like this:



To make 100% sure that the pulley is running exactly true you will want to follow the below procedure.

Keep in mind that the following pictures are the way they are so you can see what is going on. I did not use washers so you can see better in the pics (you will use washers). You don't need to have the bolts backed out as in the pics, you can "feel" what you're doing once you have looked at these pics and see what is supposed to happen.

Step 1:

Put pulley on hub.

Step 2:

Using the supplied fasteners (M6x25 SHCS x6/ M6 washer x6) fasten pulley to hub. Don not tighten fasteners down, leave them a little loose.

Step 3:

Rotate the pulley counter clockwise until the bolts are in the "pockets" of the holes. You can see what this looks like in the pics. You don't want to or need to put any real pressure on the pulley, just enough to take up the "slop".

Pics of what you're trying to accomplish:



Step 4:

While still holding the pulley in position lock down one of the bolts

Step 5:

Lock down the rest of the bolts in a criss cross pattern (like a wheel).
You will torque the bolts down all the way after you get the belt on later.

Section 6

Fuel Rails &

Injectors

6-1

This section will be written as "theory" more than part A fits into slot B to assure your injectors and rails are set up correctly.

The GT450 manifold is set up to be able to use any combination of GT injectors (long), GT500 injectors (short), GT fuel rails or GT500 fuel rails. You are most likely using your stock GT rails and GT500 injectors. If you are not contact us and we will walk you through it.

6-2

GT Rails/GT500 (short) injectors:

If you are running GT rails with GT500 style (short) injectors you cannot re-use the OEM fuel line/cross over tube. Remove the OEM fuel line/cross over tube. The easiest way to do this is by cutting the tube at the rails with a razor blade. Sneak up on it, you don't want to put a groove in the fitting/fuel rail.

Remove the stock fuel injectors from the rails if they are assembled.

Thoroughly clean the fuel rails inside and out with carb cleaner or brake clean.

Make sure your injectors are clean.

Lube the injectors top O-rings.

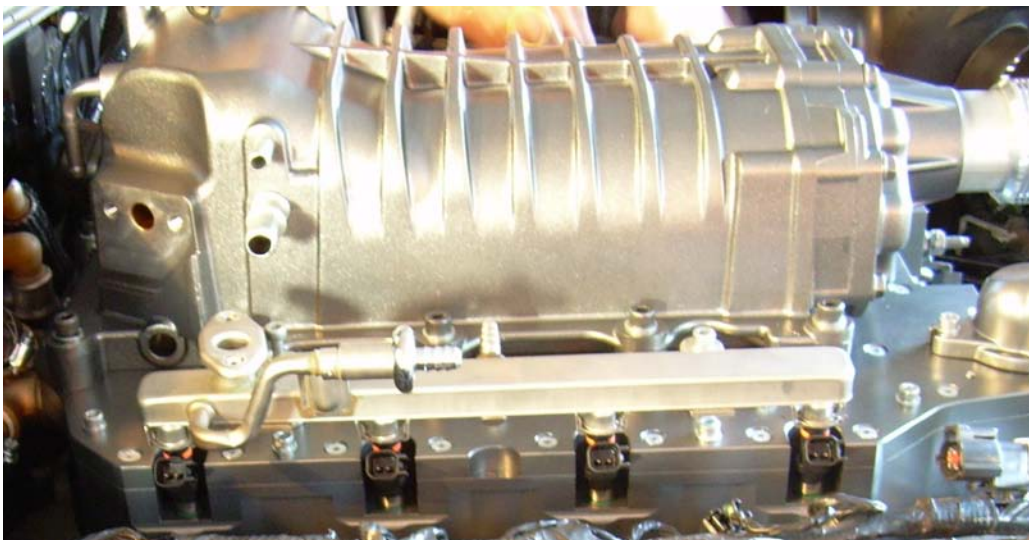
Put fuel injectors in rails. If you have OEM style injectors they may have metal clips that hold them to the rails. You can use these if you want to. Some aftermarket injectors do not come with these clips. It is OK to run the injectors without them.

Install rail/injector assemblies into manifold. The rails need to be "flipped" (left to right/right to left). The fuel rail with the fuel line hook up and Fuel Rail Pressure Sensor "bung" goes on the passenger side. Seat the injectors into the manifold by lightly pressing down. The O-rings should give some resistance as they go into the manifold but not a lot. If you have a lot of resistance make sure the injectors are correctly aligned, the O-rings are lubed, there is no debris in the way or the O-ring(s) are damaged.

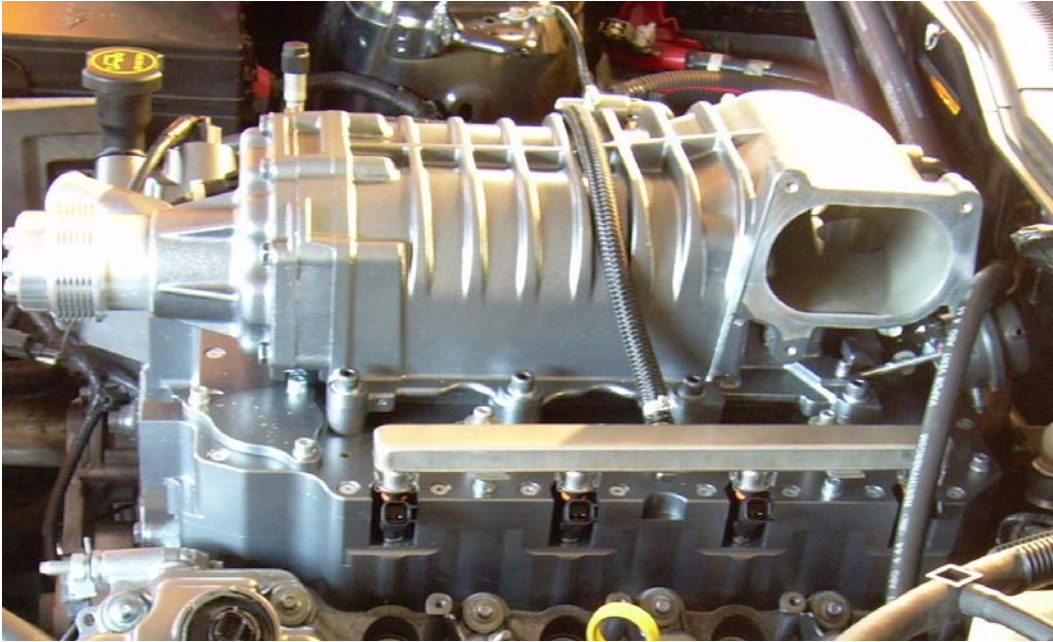
Once the injectors are seated in the manifold correctly bolt the rails up to their "towers". To make sure you have the correct height towers (different injector/rail combos have different heights) slowly tighten the rails down while checking that the injectors are not being compressed/pinched/damaged. When the rails are fully tightened down you should be able to rotate the injectors in their bores and they will be able to move up and down/in and out about 1-2mm (if you are using the OEM clips they will not move at all). If the injectors will not move they are too tight and you will want to space the rails with some washers. If they are too loose contact Department Of Boost.

Once you have the rails/injectors installed they will look like this. These pictures are GT rails with GT500 injectors.

Passenger side



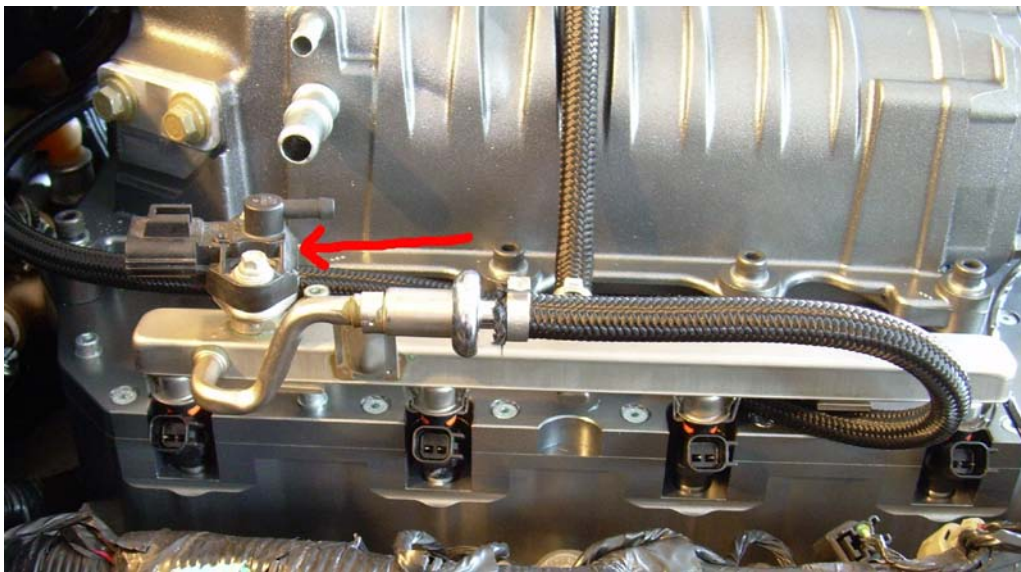
Drivers side (ignore the fuel line, that comes later)



6-3

Installing FRPS

Once the injectors/rails are installed in the manifold install the Fuel Rail Pressure Sensor on the passenger side fuel rail. Ignore the fuel lines and electrical hooked up in the picture. This comes later.



Section 7

Alternator

7-1

In order for the alternator to be installed in its new location, two of the original mounting ears must be removed. Using a band saw or similar cutting tool, remove the mounting ears shown in red. Be careful to avoid getting debris inside of the alternator when removing the ears. Taping the alternator up is advisable. If you do not remove these the "top" one will touch the bottom side of your hood.



7-2

Collect the parts needed to install the alternator:

Alternator

Alternator bracket

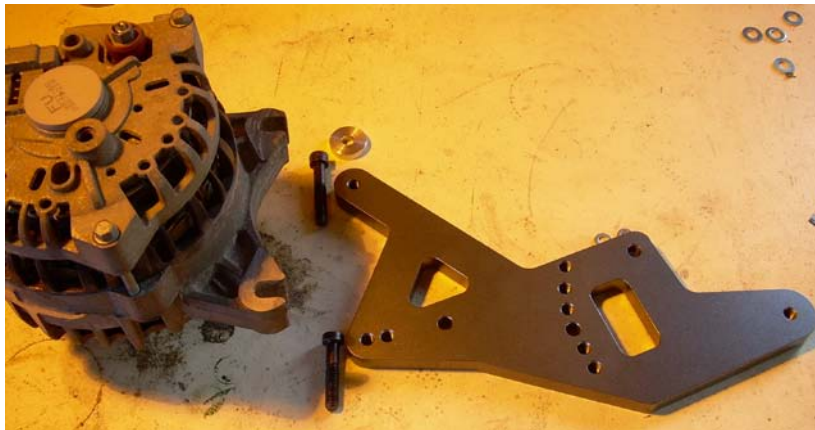
Billet aluminum Front Alternator Bracket Spacer 25x5mm

M8x45 SHCS

M8x40 low head

7-3

Arrange fasteners as pictured below. Note that the special "low head" bolt goes in the bottom slot of the alternator. The billet aluminum spacer is simply a glorified washer.



7-4

Assemble bracket and alternator as pictured.



7-5

Using the three supplied M8x25 FHCS attach the alternator bracket/alternator assembly to the front of the manifold. Note that you will not have installed the idler pulleys in this picture yet. This is quite a bit easier with two people.



7-6

Collect the parts for the two idler pulleys:

Two 76mm idler pulleys. You have one new one in a box and another new one from your second tensioner (to make the Frankentensioner).

Two billet idler pulley spacers

Two M8x45 SHCS

Two large 8mm washers



7-7

Assemble pulleys as pictured below. The billet spacer goes on/in the back side of the pulley and the bolt/washer go through the front.



7-8

Bolt pulleys to alternator bracket as pictured.



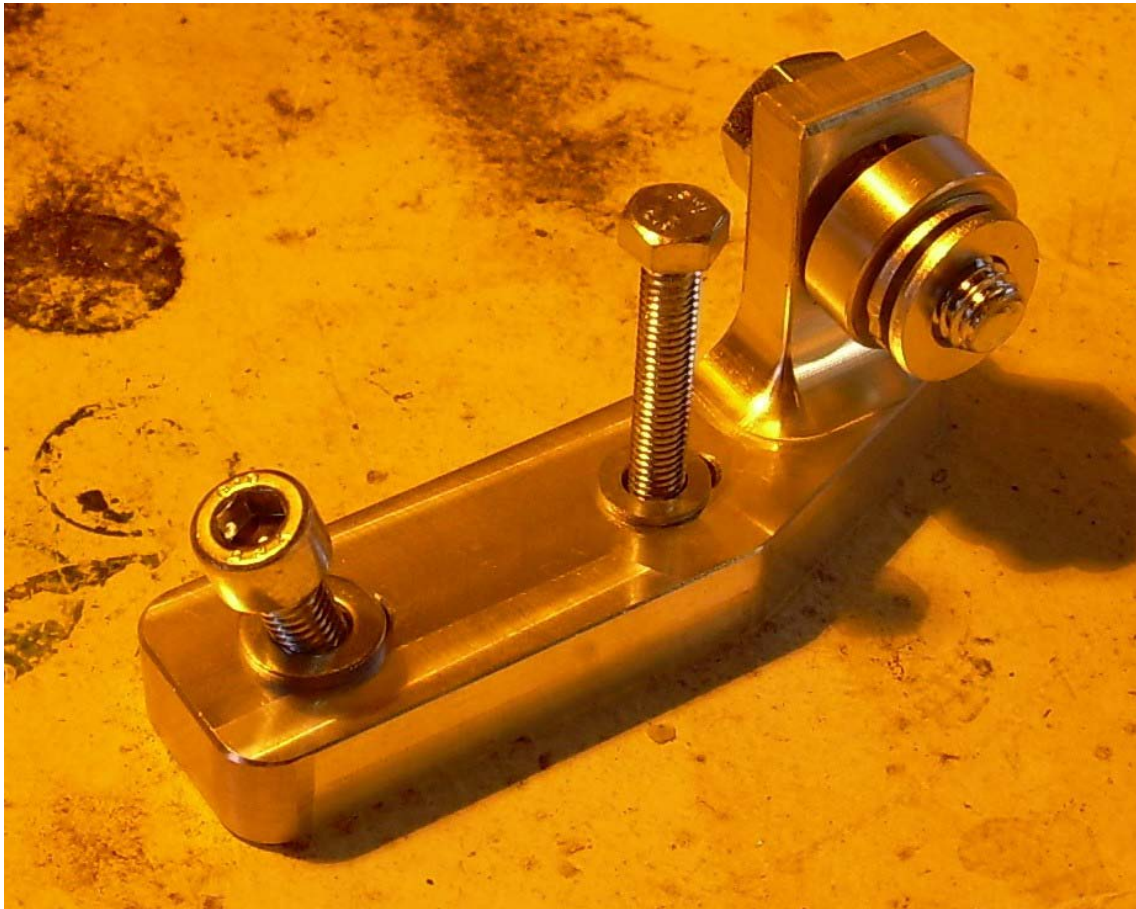
7-9

Collect parts/fasteners for rear alternator bracket (these should be packaged together)

Billet rear bracket

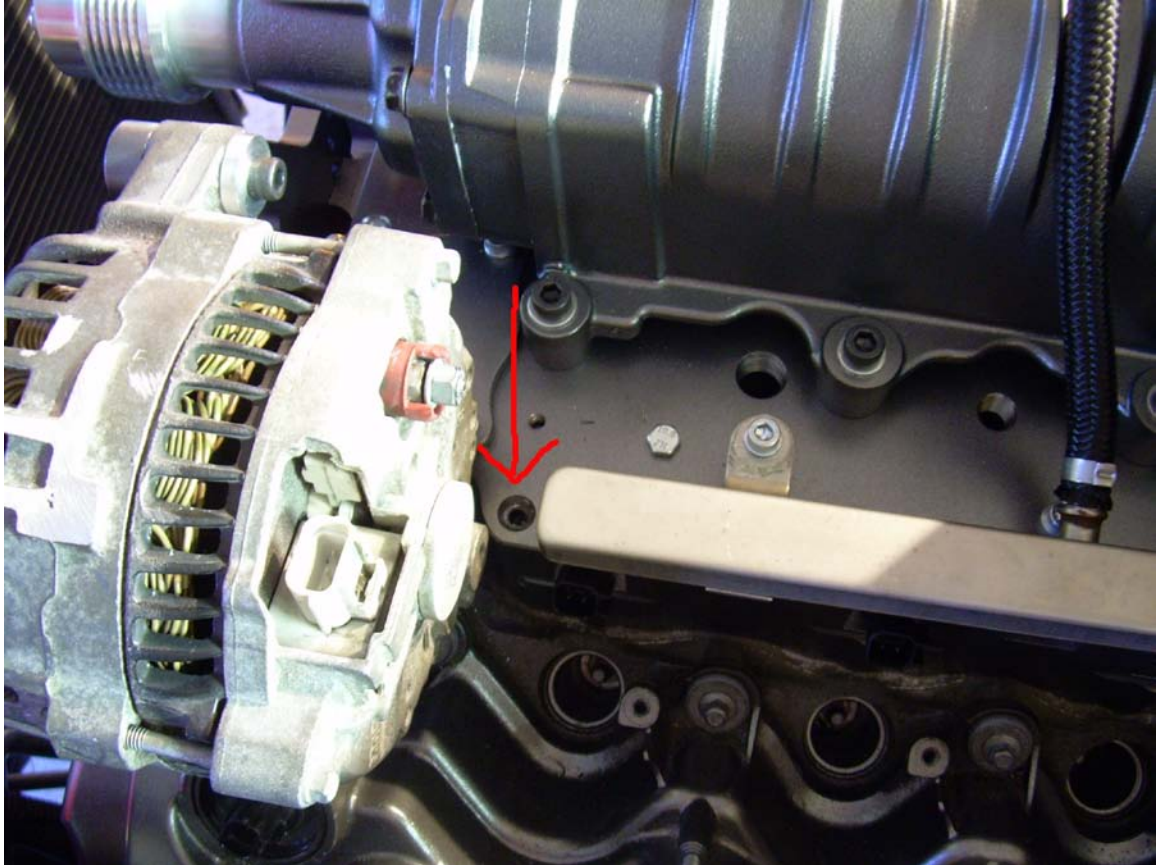
Billet spacer

Fasteners



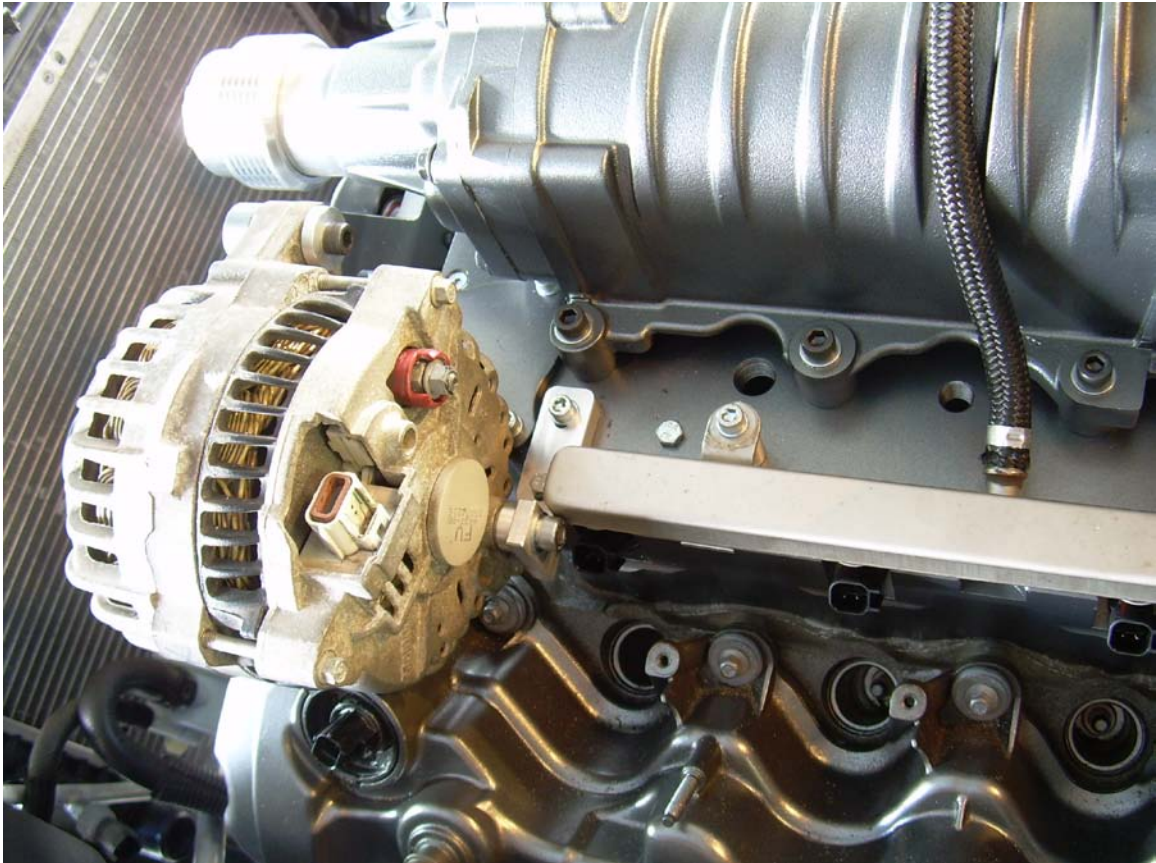
7-10

Remove the 5mm FHCS (3mm allen tool needed) from the manifold top that was used for assembly.



7-11

Using the supplied hardware install the rear alternator bracket so it looks like the one pictured. The bracket comes with a spacer and a few extra washers because not all the alternators are exactly the same size. Use the washers as shims to get the correct alignment between the bracket and the lug on the rear of the alternator.



Section 8

Lines/Fittings/Etc

You will have a LOT of options in this section. You can route lines around the engine compartment any number of ways. You can use many different types of hoses, lines, etc. You can copy the way it was done in the instructions exactly or if you are going for a different "look" can route lines a different way or use nicer hoses, etc. Best thing to do is read the instructions, understand what you are trying to accomplish then decide how you want to do it on your own car.

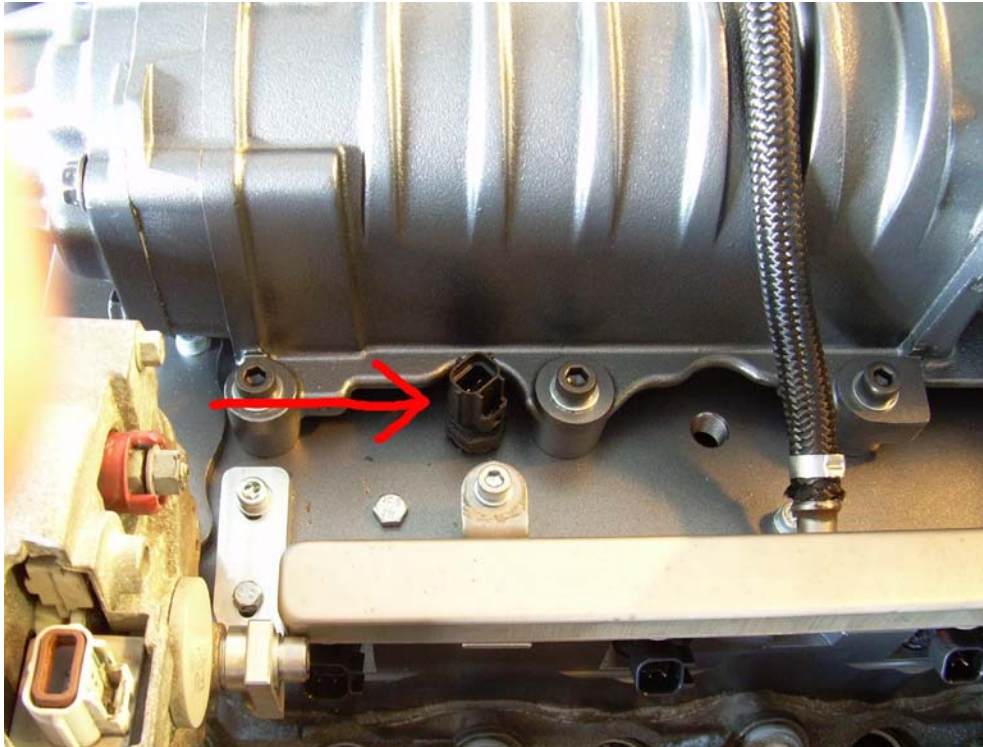
8-1

Locate your new OEM Ford Intake Air Temp sensor (part number is in parts list). It should look like the one pictured below.



8-2

Thread IAT sensor into the threaded hole shown in picture. DO NOT go crazy tightening it down. It is plastic and will break if you go full "Hulk" on it. If your sensor does not have thread sealant on it you can use a little pipe dope or Teflon tape to make sure it seals.



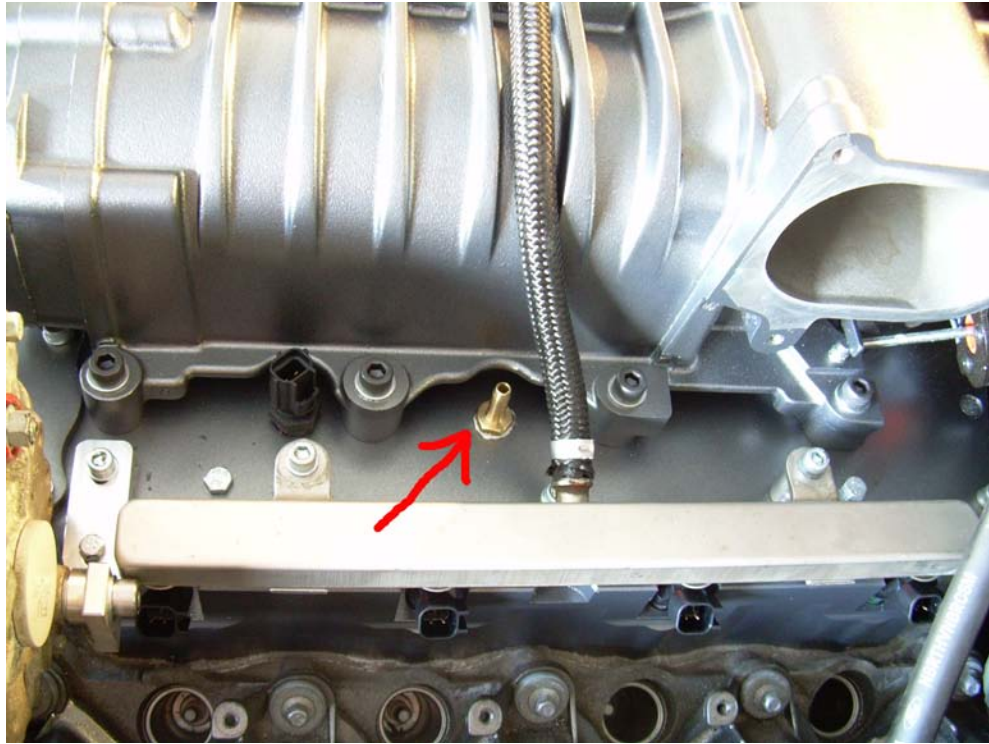
8-3

Locate your new 1/4NPT-1/4 barb brass adapter that looks like the one in the picture below.



8-4

Using pipe dope or Teflon tape thread the fitting into the hole pictured below.



8-5

Orient the barbs/fittings on the supercharger elbow so they look like they are pointed in the same direction as the ones pictured below. You can turn the fittings in the elbow but be careful you don't flatten them, etc. Keep in mind you don't want to be rotating them all over the place. Mess with the angle as little as possible so they don't loosen up.



8-6

Install supercharger elbow on supercharger using supplied hardware
M6x30 SHCS x4 and M6 flat washer x4.

TB and CAI /MAF

Install Throttle body (TB) on supercharger elbow using supplied hardware M6x25 SHCS x4 and M6 flat washer x4. You will need to swap the electronics from your stock GT throttle body to the GT500 one first. A Google search will get you all sorts of info on doing this if you can't figure it out.

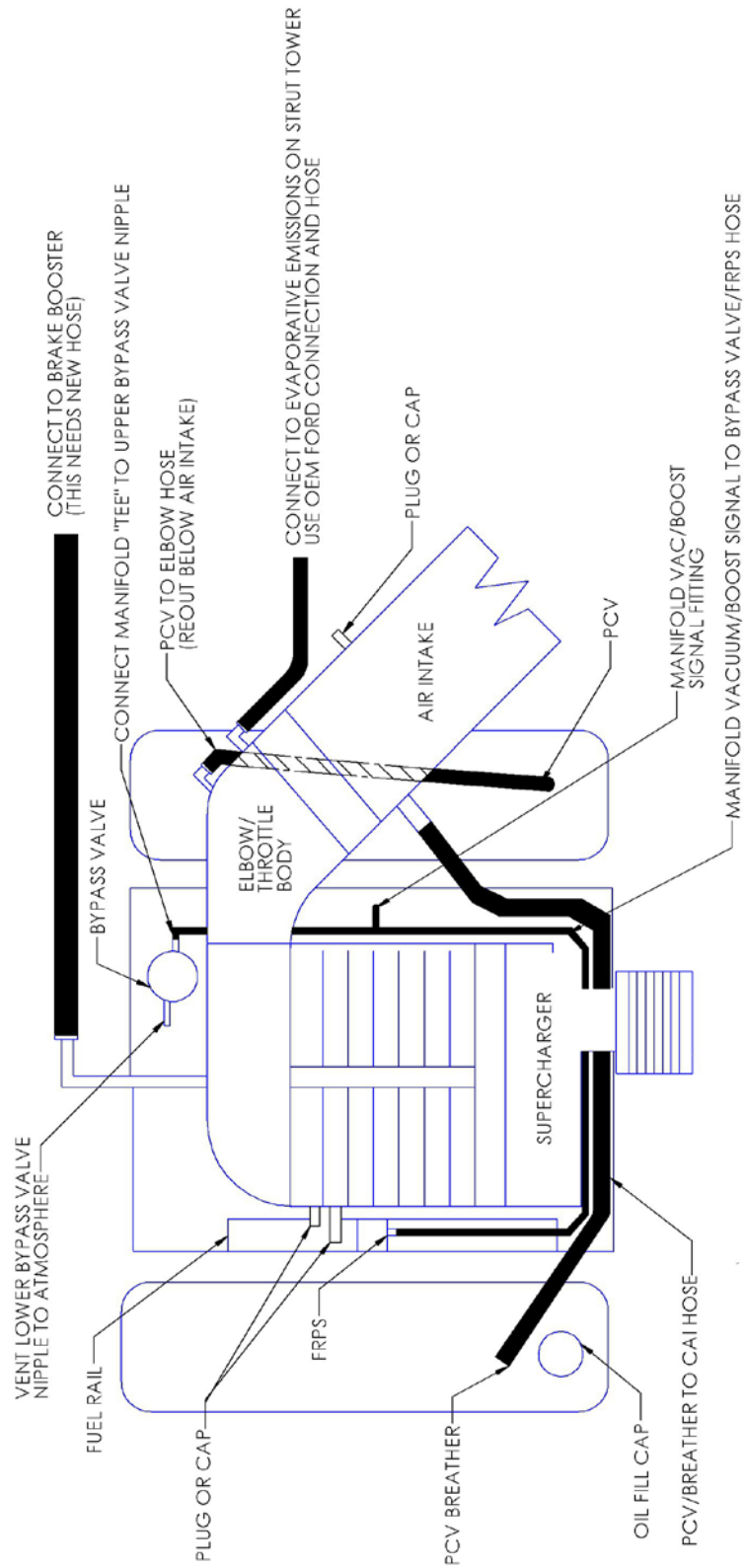
Swap Mass Airflow Sensor (MAF) from the stock Cold Air Intake (CAI) into the new one.

2005-2006 cars have a big "tab" on the DS strut tower that will interfere with some CAI's. You may need to trim it down or cut it off completely. There is a emissions control solenoid that attaches to the "tab". You will need to remount it slightly lower on the strut tower (2007+ cars are like this). There are a million and one ways of pulling this off. A little bracket and a few screws/bolts will do the trick.

Install CAI, "airbox" and air filter. It only goes on one way, it's pretty easy.

The following section covers how to make/run/etc the lines. The actual routing is up to you at the end of the day. But pay attention to what goes where, how it is connected, what lines are used, what fittings are used, etc.

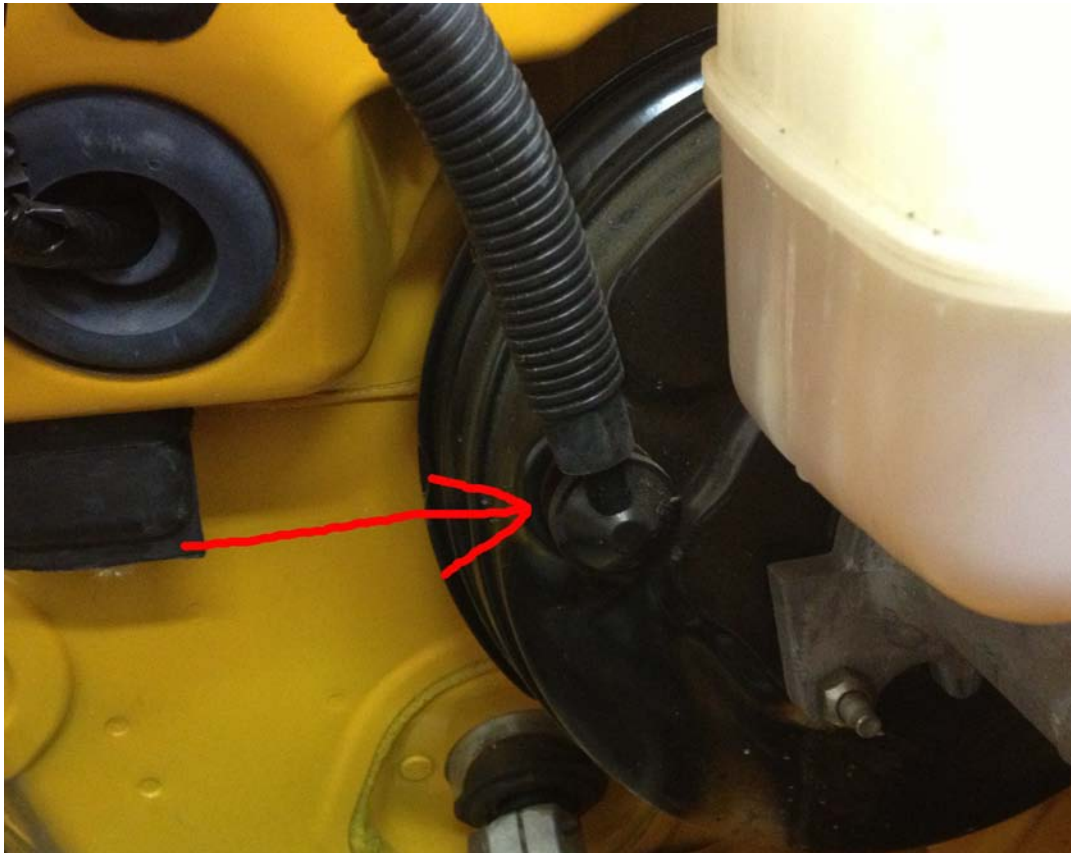
Master Hose Diagram



8-7

Brake Booster Hose

Remove (unless you have already) the plastic fitting on the brake booster. It is only pressed into a rubber grommet, but it is IN THERE. Be careful while removing it that you do not break the fitting. You will be making a trip to the Ford dealer if you do (ask me how I know). Here is where the fitting is on the brake booster.



Re-clock the barb/fitting on the back side of the blower. You can turn the fitting on the blower but be careful you don't flatten it, etc. Keep in mind you don't want to be rotating it all over the place. Mess with the angle as little as possible it doesn't loosen up. See next two pictures.

This is how it is clocked from the factory.



This is about where you want it.



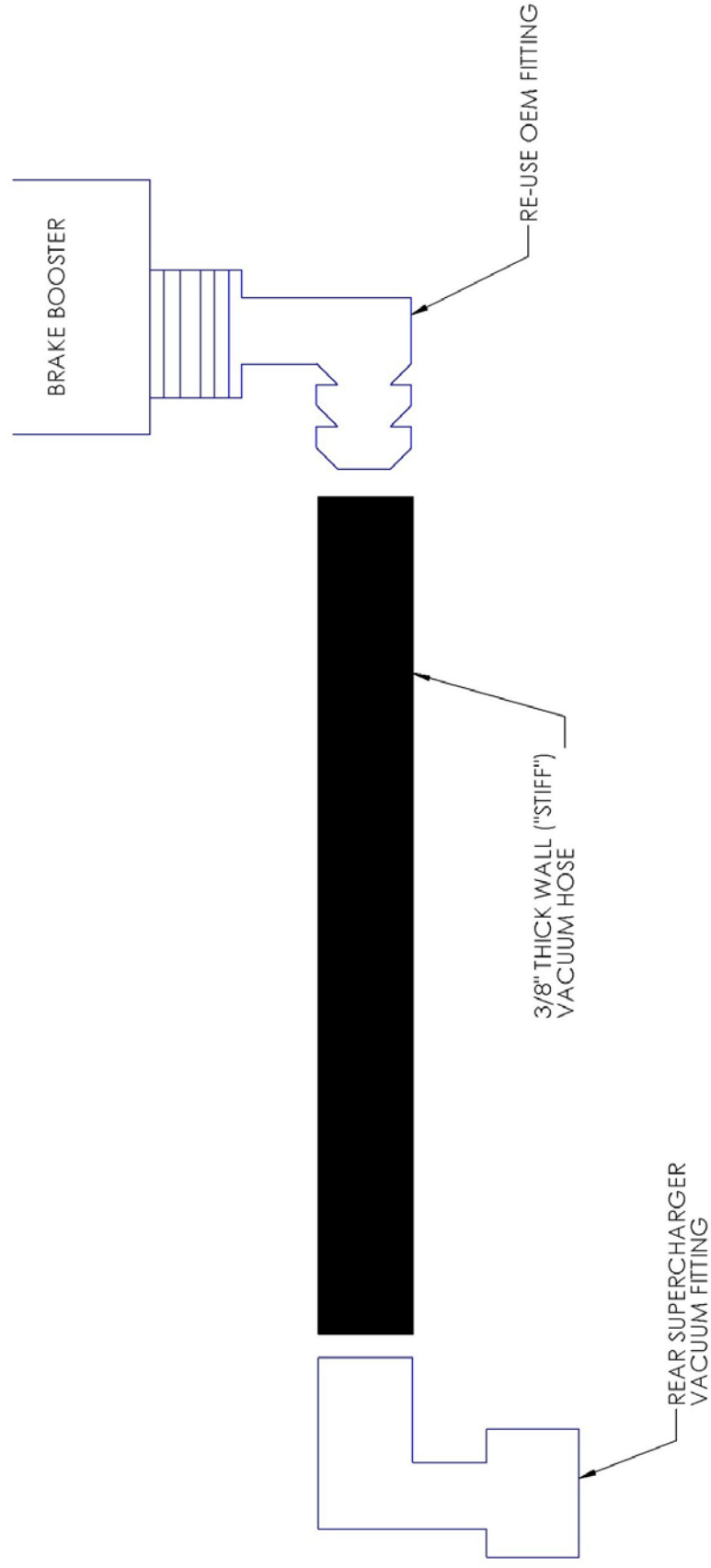
Here are some notes and a diagram covering how to run the brake booster to supercharger hose.

Remove OEM hose and inline tee fitting. Save tee fitting for use later and discard OEM hose.

Create a new hose with 3/8" thick wall (STIFF WALL). OEM hose can be used as an example of what kind of hose you will be using.

If the hose is sized correctly (tight on fittings) you do not need to use hose clamps.....but they sure don't hurt.

BRAKE BOOSTER TO SUPERCHARGER VACUUM HOSE



8-10

Here are some notes and a diagram covering how to run the PVC and CAI hoses.

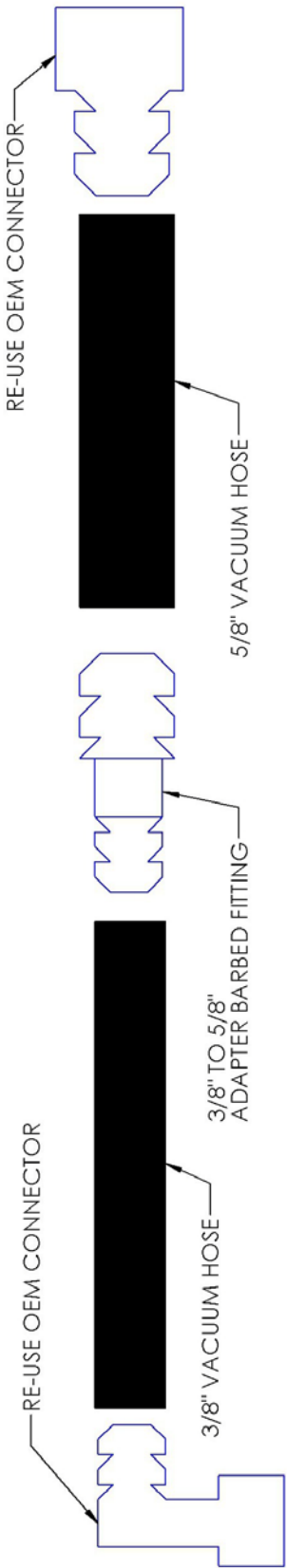
Hose length depends on routing.

Use stiff hose as it is possible for the engine vacuum to collapse the hoses.

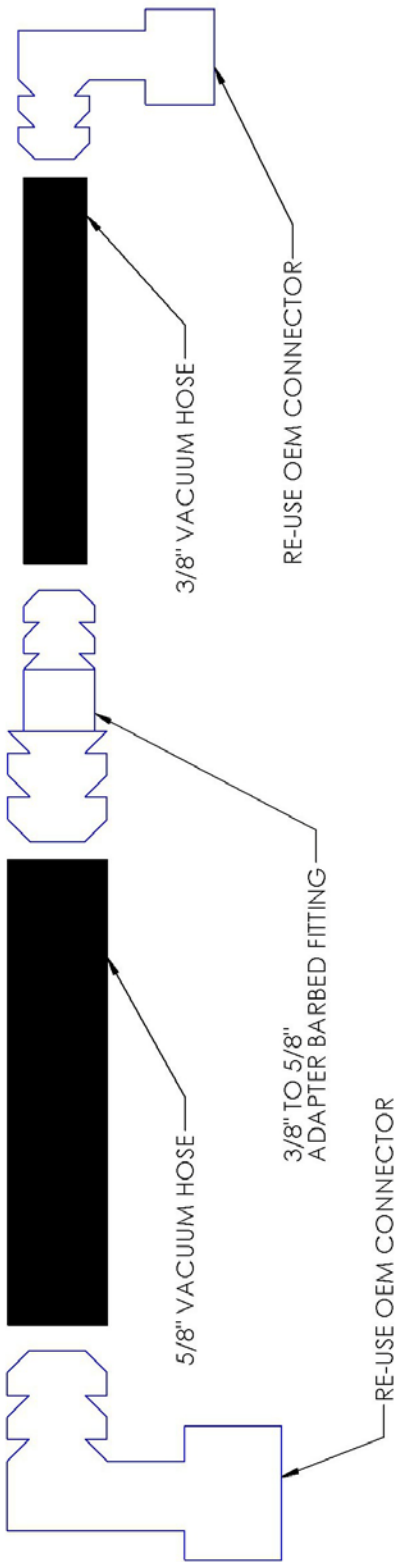
Make 5/8" sections of hose as short as possible because they are more likely to collapse than the 3/8" hose.

AS long as the hose fits correctly on the fittings/barbs you do not need clamps....but they don't hurt.

PCV/BREATHER TO CAI HOSE



PCV TO ELBOW HOSE



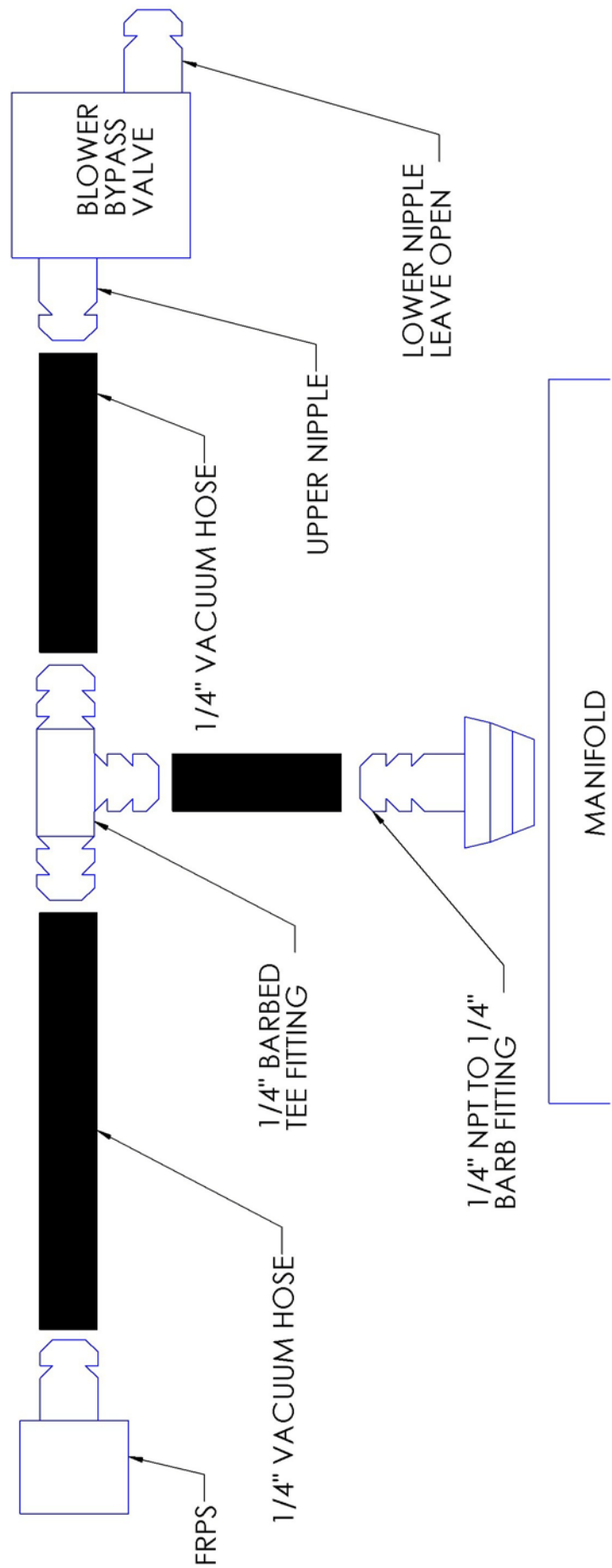
8-11

Here are some notes and a diagram covering how to run the manifold vacuum/boost signals to where they need to go.

The OEM tee that came from the original brake booster hose (which you saved, remember?) can be used for this section. The barbs on the tee are slightly larger than the 1/4" hose you will be using but it should stretch.

You can add a tee in the system to run a boost gauge if you would like.

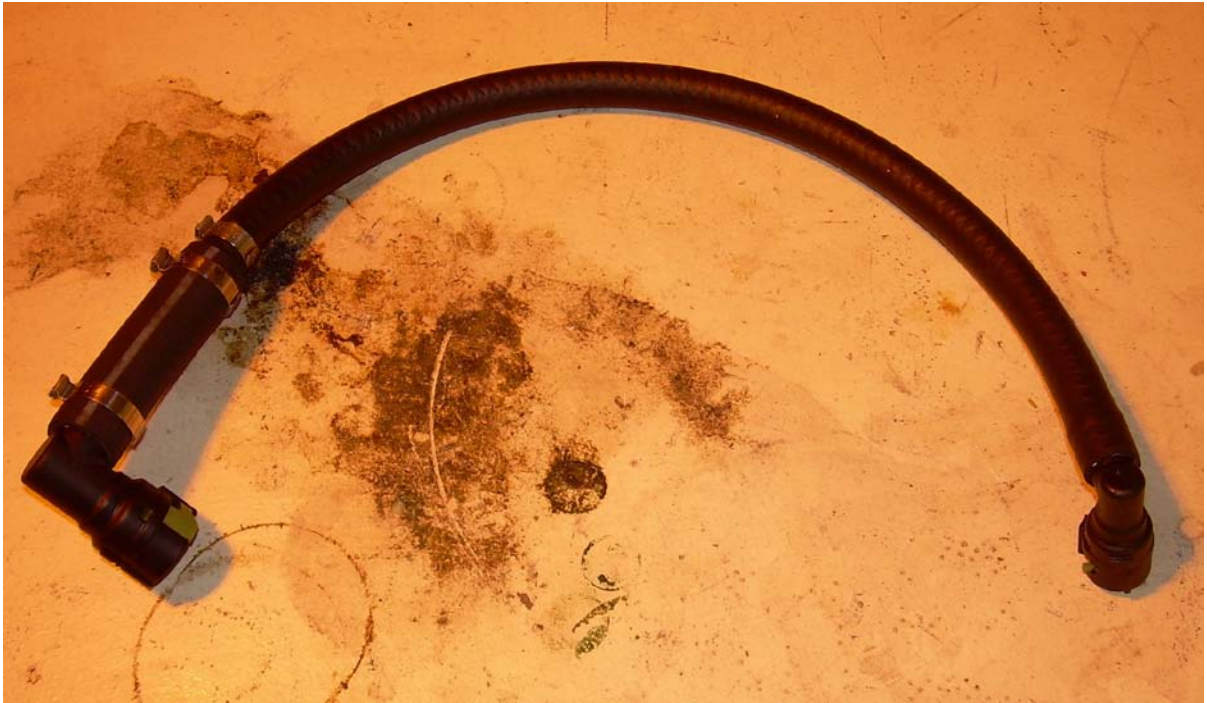
MANIFOLD VACUUM/BOOST SIGNAL VALVE/FRPS/BOOST GAUGE



8-12

Here are some pictures of what the lines CAN look like when finished. Length will be dependent on routing. Also are some pictures of how they look installed.

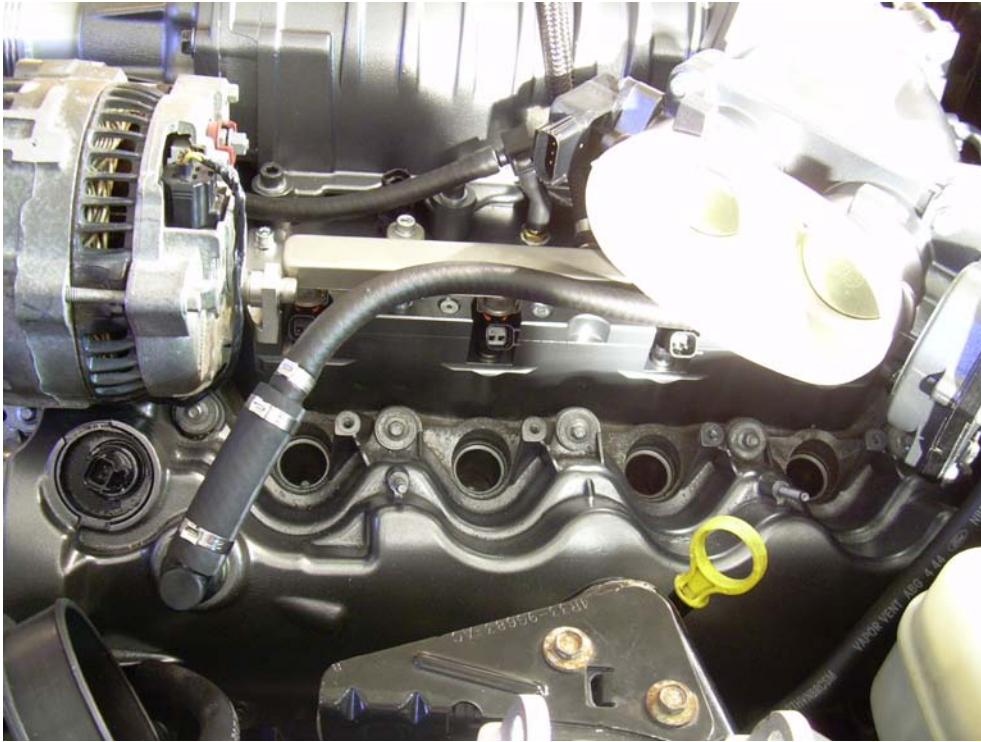
PCV to blower elbow hose



PCV/Breather to CAI hose



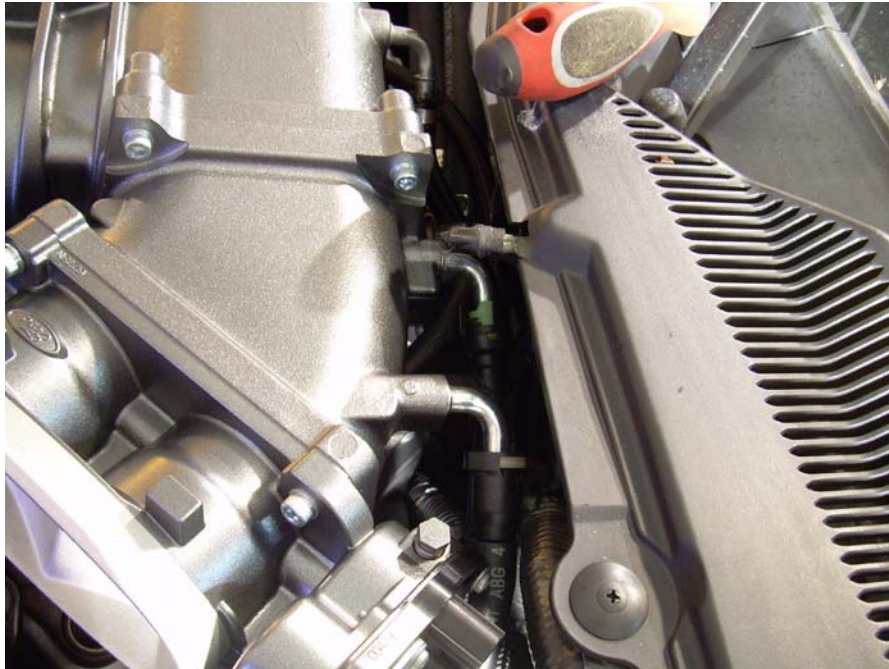
PCV to blower elbow hose installed



PCV/Breather to CAI hose installed

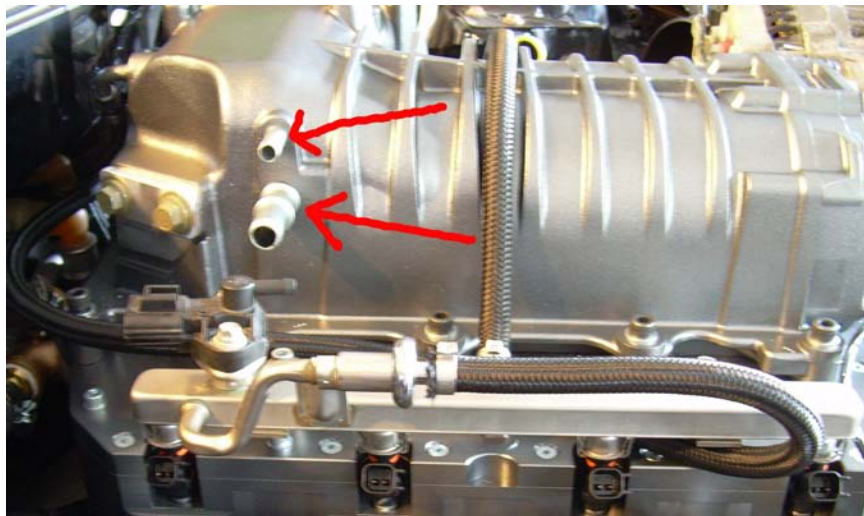


How lines look hooked up to elbow/back of blower



8-13

Now that you have all of your hoses/lines hooked up double check to be sure that there are no open ports left on the blower. There will probably be two (see pic below).



These ports need to be capped or plugged. You can simply get vacuum caps at the auto parts store or if you have the ability you can pull the steel "nipples" out of the blower (they are just pressed in) and make plugs. Either way seal them up air tight.

Section 9

Fuel Lines

There are going to be multiple ways of solving the fuel lines so this section will be a tutorial on "good fuel lines" opposed to a step by step set of instructions.

First rule of Fuel Line Club is, FUEL IS DANGEROUS! Second rule of Fuel Line Club is, FUEL IS DANGEROUS! Do not screw around with fuel lines. Not even a little. If your brain says "that should be good enough, I'll just run it like that", it's not good enough! Fuel lines need to be PERFECT!

Now that that is out of the way lets get rolling.

Fuel Rail Crossover Line

Strip the OEM line off of the fuel rails. You can cut the line off with a razor blade. Be careful not to cut into the fitting. You will be left with a little section of barbed fitting on each rail. Simply run a new 3/8" high pressure fuel injection hose the correct length from one rail to the other and secure it correctly (notes on making fuel lines later in this section).

OEM Hard Line To Fuel Rail Line

You will need to make a fuel line that goes from where the hard (stainless steel) fuel line comes out of the drivers side fender under the brake booster (remember you removed the OEM soft line here?). The new line will go from the drivers side fender location to the fuel "input" on your fuel rail. It will be on the passenger side rail.

GT Rails

You will use the OEM "fuel line ends" that came with the car. These "ends" remove from the fuel line coming out of the fender and the fuel rail with a special tool. If you have the tool great, it makes things a bit easier because you can build the line on the bench, if not it is not the end of the world though.

Strip the OEM line off of the connector at the fender and the fuel rail. You can cut the line off with a razor blade. Be careful not to cut into the fitting. You will be left with a little section of barbed fitting at both locations. Simply run a new 3/8" high pressure fuel injection hose from the drivers side fender location to the fuel rail and secure it correctly (notes on making fuel lines later in this section) to the two OEM fuel line ends.

How to correctly make fuel lines

Use approved fuel line only (high pressure fuel injection hose)!

Use approved fuel injection one time use "crimp" clamps only!

Do not run fuel lines near exhaust or any moving parts!

Once you have made the line(s) check each connection by pulling on the hose HARD. If you can pull it off with a reasonable amount of force it wasn't a good enough connection. Re-do it.

When the car is ready to start (it is not yet) check for fuel leaks before you start it. Every time you put the key in the "run" position it will prime the fuel system and bring it up to pressure. Do this a few times and check all of your fuel connections, even the injectors. Check everything again once the car is started.

Section 10

Frankentensioner

Frankentensioner (FT) Instructions:

For easy clarification I will refer to the "inside" tensioner as the one that goes closest to the engine/front cover. The "outside" tensioner is the one....well, on the outside, closest to the radiator.

In the pics you will notice I did not do a very pretty job of trimming/cutting the stops. These are pictures of the first FT ever made. I didn't even know if it would work so I didn't kill myself making it look good. I was also working with a LARGE cut off wheel which tended to cut everything around it. A Dremel would probably work best.

The most important part of setting the FT up correctly is trimming the stops.

10-1

Trim all the stops off of the top of the inside tensioner (pic below). If you don't trim all the stops off they will hit the spacers and limit the travel of the tensioner (defeats the purpose of the FT design).



10-2

Trim the "maximum travel" stop off of the outside tensioner (pic below).



10-3

Trim about 1 inch off of the "maximum travel" stops on the bottom of both the tensioners (pic below)

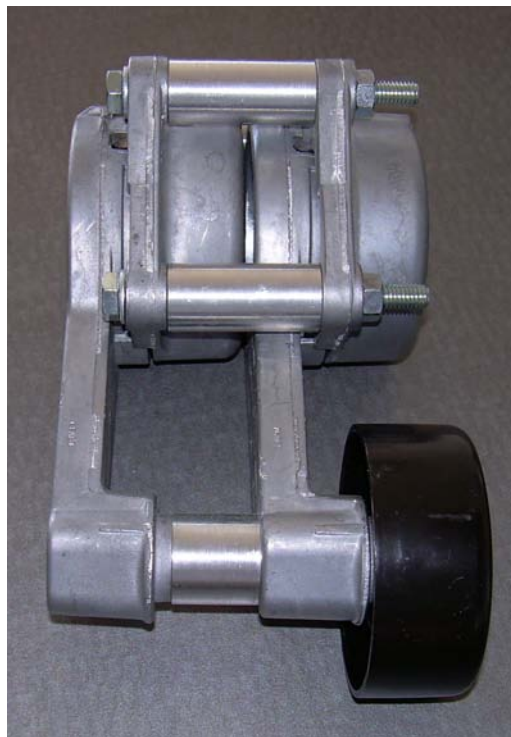


10-4

Drill the pulley bolt hole all the way through on the INSIDE tensioner.
DO NOT DRILL THE HOLE/TREADS OUT OF THE OUTSIDE
TENSIONER!!!!

10-5

Using the supplied hardware/spacers assemble the Frankentensioner.
The large washer is used on the pulley bolt (pic below). Ignore the
nuts in the picture, those are just there for photo purposes, you won't
be using nuts.



10-6

Install FT in its stock location on the front cover.

10-7

It is not a bad idea to check that the tensioner is working correctly.
You can do this by putting a long breaker bar/ratchet in the tensioner
and checking its travel. It should travel slightly over 2". If it doesn't
you missed trimming a stop(s).

Section 11

Belt

Prep/Routing/Setup

11-1

Locate your 130" 8 rib belt (Dayco belt # 5081300 or equivalent).

11-2

Because the Mustang GT has a 6 rib belt system and you can't get a 6 rib belt 130" long you will be modifying your 8 rib belt to work. You will be trimming off two ribs.

There are two ways of doing this:

First way

Using a new razor blade/utility knife lay the belt out on a flat surface (preferably wood) ribs up. Place the razor blade in the second groove (so you are cutting two ribs off) and slowly start cutting along the length of the belt. The groove will help you keep the razor blade centered correctly. It is also easier to do if the belt is wet. Take your time. If you dork this up too much the belt will be useless. Keep cutting until you have a 6 rib belt.

Second way

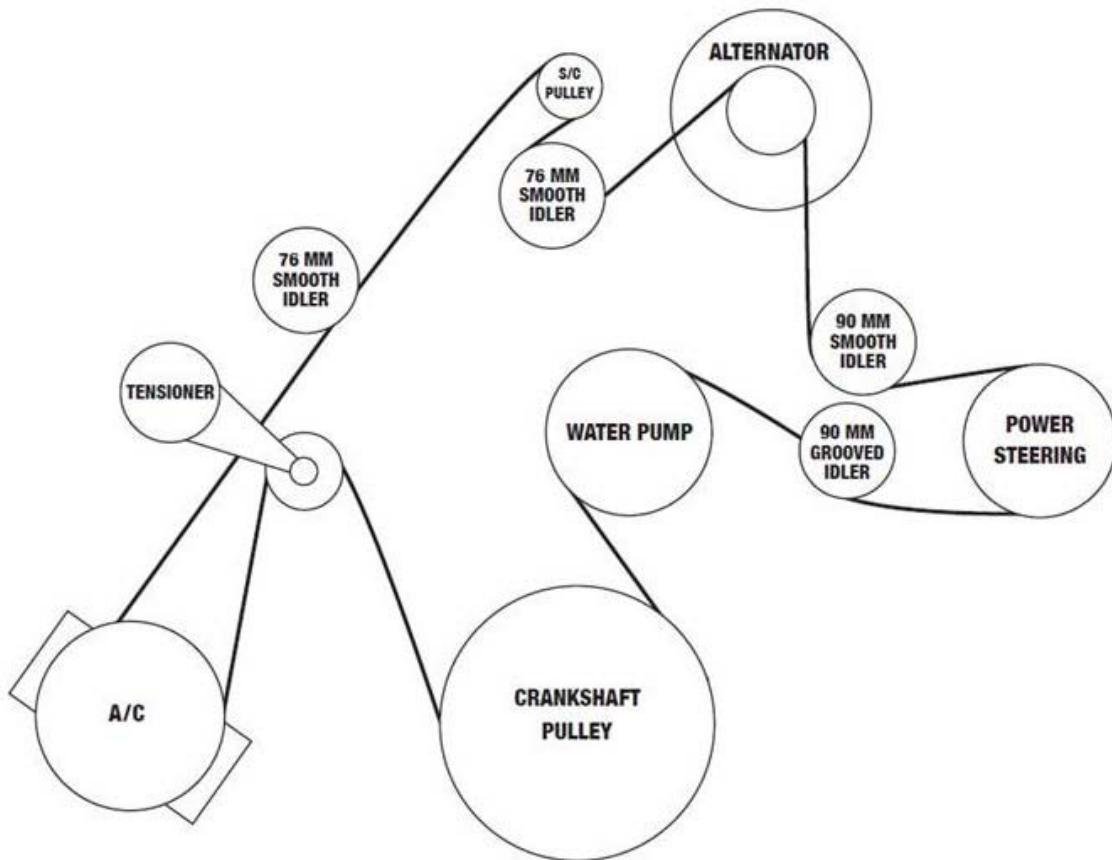
Clamp a new razor blade in a vice with some blade sticking out of the jaws. Holding the belt ribs down (toward blade) place the razor blade in the second groove (so you are cutting two ribs off) and slowly start cutting along the length of the belt. Think of it as using a little table saw...with a non moving blade. The groove will help you keep the razor blade centered correctly. It is also easier to do if the belt is wet. Take your time. If you dork this up too much the belt will be useless. Keep cutting until you have a 6 rib belt.

11-3

Install belt

For the most part the belt is routed exactly like it was stock aside from the blower snout and the new alternator location. If you have aftermarket pulleys you may have some fiddling around to do to get the belt set up correctly. Different diameter pulleys change the effective length of the belt. Large pulleys make the belt "shorter", smaller pulleys make the belt "longer".

Start by installing the belt using this diagram (below).



11-4

Setting Up Tensioner

It is VERY, VERY important that the belt have enough tensioner preload on it. If it does not and it is too loose it will slip. If it is too tight it will bang into the stops when making gear changes and possibly chuck the belt, break the belt, beat up the bearings or damage the oil pump. The tensioner travels about 2" total (you checked this when you installed the tensioner remember?). With the belt installed you want the tensioner to be roughly in the middle of its travel (about 1"). This is a lot easier to check with two people. If you are 1/4-3/8" off don't worry about it, that is close enough. The belt will stretch out slightly so if anything being on the tight side of 1" preload is not a bad thing. If the tensioner is not in the correct position you can change it slightly by using a different mounting hole for the pulley under the blower snout/pulley. You will see there are multiple holes there to choose from. If you can't get it in range with the adjustable pulley you will have to mess with the diameter of one/some of the idler pulleys until it is right.

11-5

Breaking The Belt In

You will be reminded in the Start And Systems Check section to do this again, but it is important so it will be gone over here too. Like brake pads or a good pair of boots the belt needs to be broken in correctly for best performance. If you do not break the belt in you risk belt slippage and a shorter belt life. To correctly break the belt in start the car (no, you are not ready to start the car yet) and let it idle for about 5min. You will be starting the car to check for leaks, fluid levels, etc anyway. This is a perfect time to do it. This 5min break in will get the belt up to temp. Once it is up to temp you want to let the belt sit until it is at room temperature. Once the belt cools back down the break in procedure is completed. If you have a spare belt (you should have one in your trunk as well as the tools to change it) break that one in too before storing it away. If you have to change belts on the side of the road or on the dyno you don't want to wait on the break in procedure.

Torquing Supercharger Pulley

Now that the belt is on you can tighten the supercharger pulley without it spinning. You can simply tighten the six fasteners by hand if you want. It's not critical. But if you want to go crazy you can torque them to 60 inch pounds (NOT FOOT POUNDS!)

Section 12 **Engine Cooling** **System**

The 2005-2006 and 2007-2010 cars have different hose routing. Each will be dealt with differently.

If you are not exactly sure what you are working on or if you have an early year 2007 model build car you can tell if you have the 2005-2006 setup by looking at how the coolant hoses come out of the motor (before you took it apart). If there are two hoses coming out of the coolant crossover (one on each side of the alternator) then it is a 2005-2006 setup. If there is one hose coming out of the coolant crossover (on DS of alternator) then it is a 2007-2010 setup.

2005-2006 Cars

You will need 2007-2010 radiator hoses. The part numbers are in the parts list and you should already have them.

The lower radiator hose is very straight forward. It is the one that has an "extra" hose coming off of it so it has three openings. Simply install the hose so it goes from the lower radiator outlet on the driver side, under the power steering pump and to the fitting on the engine block. The "extra" hose goes to the coolant expansion bottle on the fan shroud.

The upper radiator hose needs to be trimmed shorter so it goes from the water neck on the manifold to the upper radiator inlet on the passenger side of the car.

2007-2010 Cars

Your lower radiator hose should still be on the car. If it is not put it back on.

The upper radiator hose needs to be trimmed shorter so it goes from the water neck on the manifold to the upper radiator inlet on the passenger side of the car.

All Cars

Clamp everything down and double check it. Once everything is clamped down fill the engine cooling system through the coolant expansion bottle on the fan shroud. It will take a while to fill it up because of the way the system is designed. Just fill the bottle, the level will go down, fill it again, it will go down. Wash, rinse, repeat until the level stops dropping and it is filled up to the line on the bottle.

Section 13

Intercooler System

The intercooler system, which is composed of the intercooler (it is in the manifold), heat exchanger (the "radiator" that mounts in the nose of the car), water pump, overflow/degas bottle and hoses can become tricky unless it is approached with an understanding of how the system works. This section will outline how the system works.

The job of the intercooler system is to reduce the discharge temperatures from the supercharger. When air is compressed (the supercharger is a air compressor) it gets heated up. In perfect conditions (using a 100% efficient pump for example, which there is no such thing) every psi of compression raises the air temperature 9.7deg. Superchargers are not 100% efficient though so you will see an increase in temperature of about 13deg/1psi. Your blower will be making between 10 and 12psi. Obviously compressing the air that much will raise its temperature considerably. About 170deg. Then you need to add that to the temperature of the air that is going into the supercharger, which should be pretty close to the outside air temp and on a 75deg day you will be seeing 245deg blower discharge temps real fast. That is a LOT of heat! Too much heat for the motor to run correctly on anything short of nasty, nasty race fuel or e85. The engines computer controls (ECU) start reducing ignition timing at 136deg Intake Air Temperature (IAT's) which absolutely kills power. Clearly something needs to be done to reduce those blower discharge temps before it is pumped into the motor. That is where the intercooler comes in.

The intercooler is basically a small, very dense radiator that is in the manifold and sits right under the blower. The blower discharge is forced through the intercooler, which has water flowing through it "on the other side" of the core, into the motor. Which cools the intake air charge. Obviously the key here is to supply the intercooler with as much cool water as is needed/as you can to combat the high IAT's. The hopefully cool water that runs through the intercooler comes from/is managed by the rest of the intercooler system. The water pump pumps the water, the heat exchanger cools down the hot water coming out of the intercooler and the overflow/degas bottle provides a

reservoir of water to feed the pump (and a few other small things). You will be “building” an intercooler system.

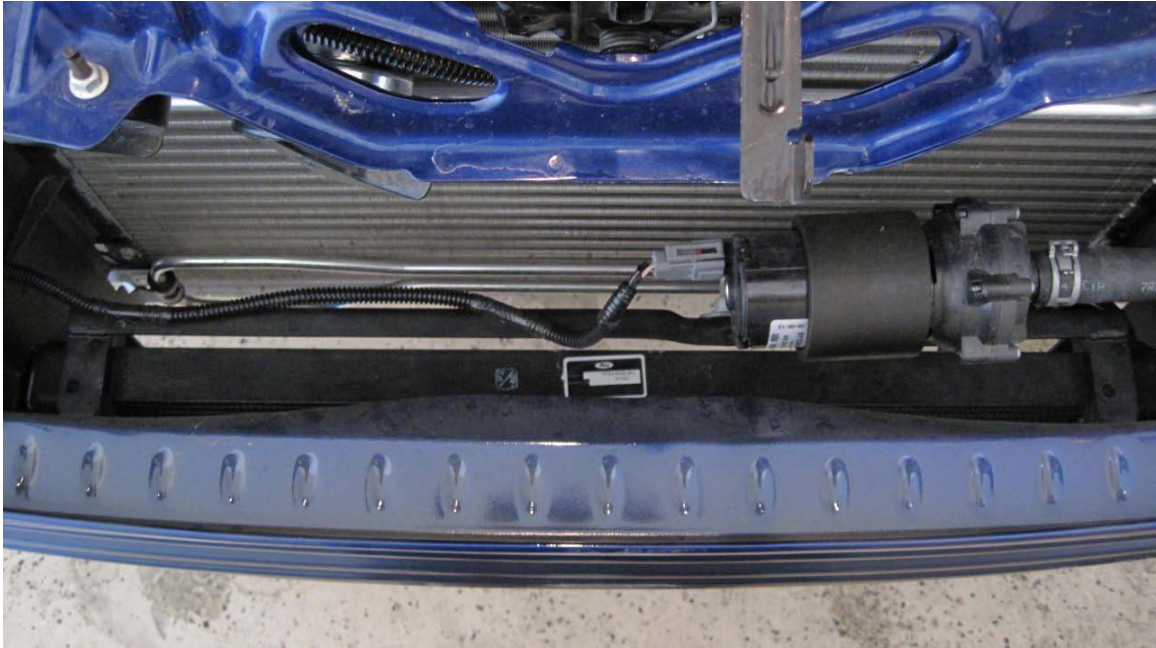
You will be using GT500 type intercooler system parts. Which is good because these are for the most part “bolt ons”.

The Heat Exchanger

Most heat exchangers, even the aftermarket ones, are geared toward GT500's. This is good because this makes them easy to mount. GT500 style heat exchangers mount to the back side of the front bumper brace usually using the bumper brace mounting bolts (or replacement ones that are longer). The heat exchanger is to be mounted so it “hangs down” from the mounting bolts. The heat exchanger will be getting its airflow from the lower bumper cover opening below the bumper. Pretty basic stuff. Mount your heat exchanger.

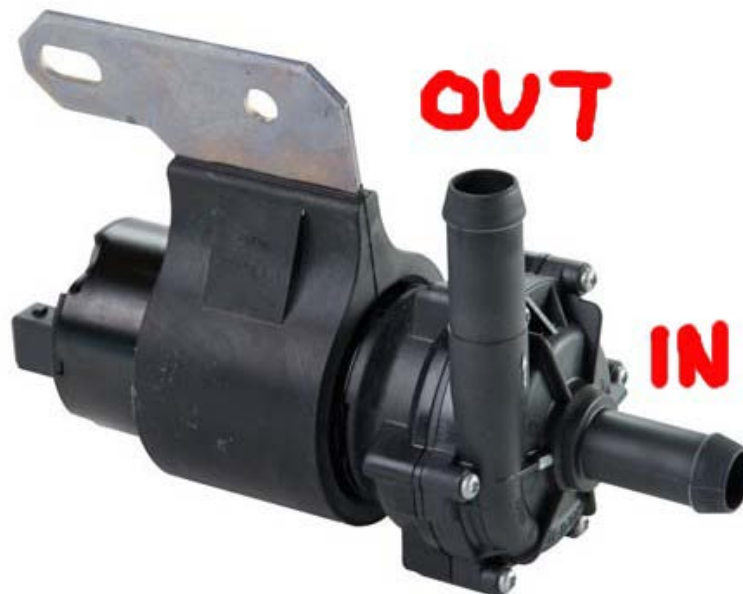
Here is a picture of a heat exchanger mounted. The heat exchanger pictured is a aftermarket unit, yours will probably be smaller (unless you got the optional upgrade). But the idea is the same.





The Water Pump

You will be using a stock GT500 water pump. Note which ports are the in and out.



On GT500's the pump is either mounted to the back/top of the heat exchanger or to the bumper. Something like this. Note that this is the back side of the heat exchanger. If your heat exchanger does not have

mounting studs for the pump you can mount it to the bumper. If you do not have the "mounting bracket" you will be making one. Hose clamps work pretty good for this.



The Overflow/Degas Bottle

There are a million and one overflow/degas bottles out there. We provided you with the one we think has the cleanest install and is the easiest to do.

The easiest overflow/degas bottle to install is the Roush part #R07070007-13-CA. It mounts between the engine cooling systems overflow/degas bottle and power steering reservoir. Here is a picture with the Roush bottle installed.



How The System Is Set Up

This section will cover how the system needs to be setup, in what order things are in the system, etc. Things like hose routing is

completely up to you. What is important is how/in what order all the hoses are connected, not how they are run through the car. For example, you could run the hose that goes from the intercooler to the overflow/degas bottle all the way through the interior, into the trunk and back if you wanted to. It would be stupid so it is not recommended though. Best bet is to keep the hoses as short as possible. This system diagram/outline is based on how the GT500 is set up because you will be using GT500 type parts. Setting your system up like a GT500 is going to be your best bet. It's the easiest to install and it works just fine.

Here is how the system is to be laid out/connected together. We are starting at the intercooler because you have to start somewhere in the "loop" and the intercooler is as good a place to start as any.

System Order

The water coming OUT of the intercooler (hot) runs to the upper port on the overflow/degas bottle. The intercooler inlet/outlet are on the back of the manifold. It doesn't matter which port you make the IN and which port you make the OUT. The water will flow the same going either direction through the intercooler. That being said you may find that it is neater/cleaner to run the hoses a certain way.

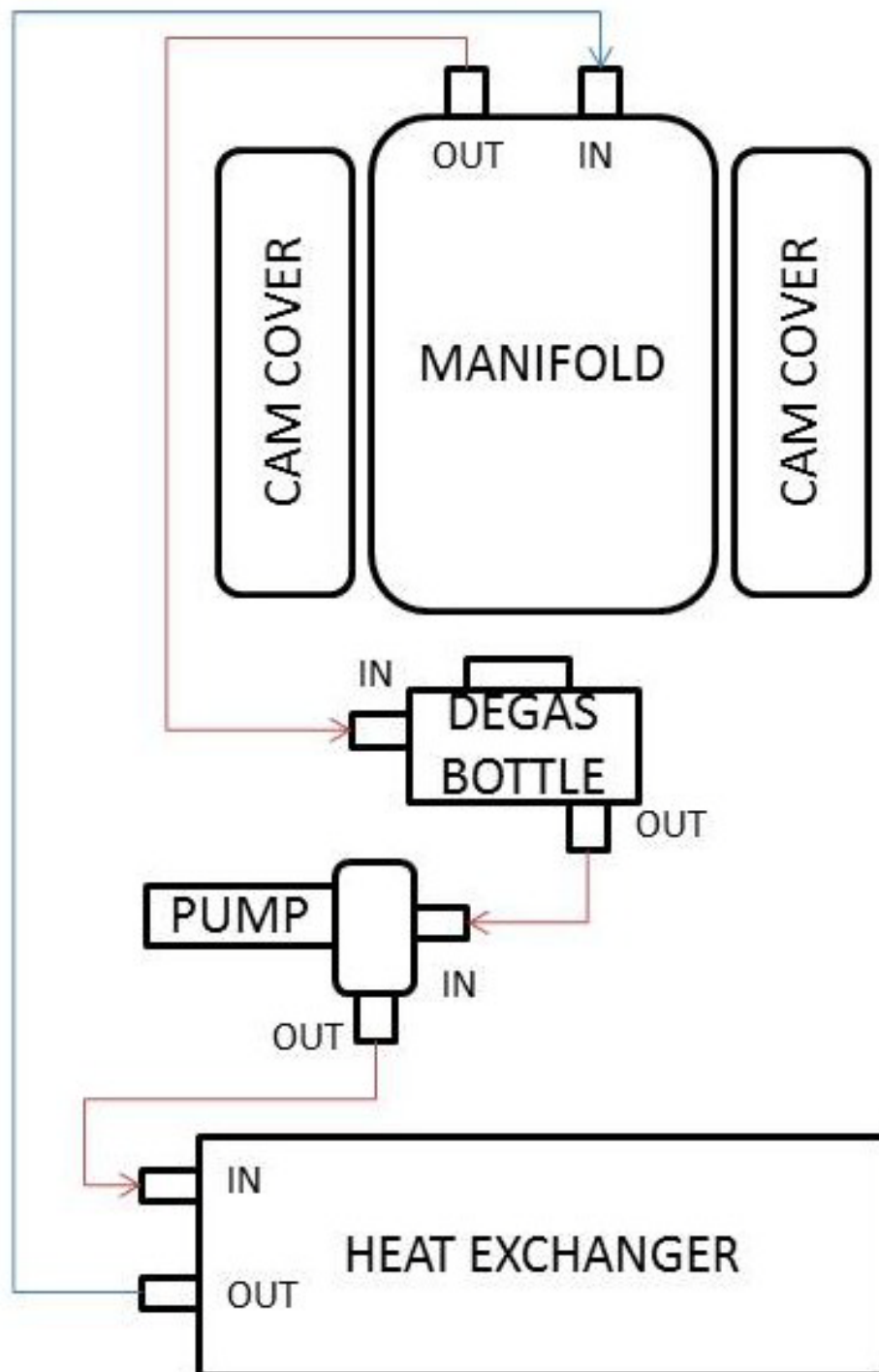
The lower port on the overflow/degas bottle runs to the inlet of the pump.

The outlet of the pump runs to the upper port on the heat exchanger.

The lower port on the heat exchanger runs to the IN side of the intercooler.

This is your loop.

Intercooler System Diagram



Intercooler System Notes

The overflow/degas bottle needs to be at the highest point in the system. If you mount it to the radiator shroud it will be.

Use the 3/4" hose supplied.

In some cases you will not have a choice but keep sharp bends in the hose to a minimum. They reduce flow.

The IN and OUT fittings on your heat exchanger may not be in exactly the same place as in the diagram. What is important is which is the top and which is the bottom. Just make it work.

Aside from running power to the pump and filling the fluid this concludes how to set up a GT500 style intercooler system.

Section 14

Spark Plugs

Now is a good time to put in a new/colder set of spark plugs. Because of the supercharger, the extra combustion pressures and heat it is advisable to run a "cooler" set of plugs. The 2005-about 2008 and a half take one style plug and the 2008 and a half-ish cars take another. If you have a 2008 car you will need to verify which plugs you have. There is TONS of information on the net about plugs for these cars. A google search will get you everything you need.

The 2005-2008.5-ish cars have a habit of the plugs breaking off in the heads when removed. Do yourself a favor and google it. You will want to be prepared for this.

Section 15

Electrical

This section is the one that most people are scared of (I understand, I used to be like that too). But it is not scary if you understand what you are trying to accomplish/how things work opposed to just blindly following some instructions and when you are done you made the correct connections, but you don't know what anything does. This section, like some others, will be along the lines of a tutorial opposed to a "Tab A fits in slot B" situation. Lets start with the easy stuff.

Lengthen Wires

This part is pretty easy. Because your Throttle body, Mass Airflow Sensor, Fuel Rail Pressure Sensor, etc are now in different locations you need to get their electrical connections to them (read the next step before starting this one). This is as simple as making the wires

longer. I'm not going to go into a multi page set of instructions on how to lengthen wires, all of that information can be had on google with a few key strokes. But long story short, cut the wires that need to be lengthened, butt-connector, solder, etc in the correct length of wire to get the plug to where you want it, and get er done. Use similar or the same gauge wire as the stuff you are jumping into, make sure your connections are good, encase the wires in split-loom, etc and zip tie them to the existing harness so they will be neat, safe and out of the way. Most people seem to be running the new wires either behind the blower along the stock harness or under the snout of the supercharger. The last one to do is the alternator "cable" and wires. The wires are just like the ones above, make them longer/make them fit. Most people run them under the blower snout.

The alternator cable can be a little more trouble. Splicing extra length into a cable that large is not quite as easy. The stock alternator cable is a 4ga cable. You will be tempted to just replace the whole cable, don't. There is a fuseable link in the cable that is there for your/your cars safety. The fuseable link is at the alternator end of the cable. So when you go to lengthen it don't cut into that end, cut into the battery end of the cable. You were supplied with 4ga "crimp" connectors. They work just fine. That said it doesn't hurt to use the crimp connectors and then "fill" them with solder. We've found that the best way to crimp a connector that big is to put it on something solid, like an anvil and "crimp" it using a punch and hammer.

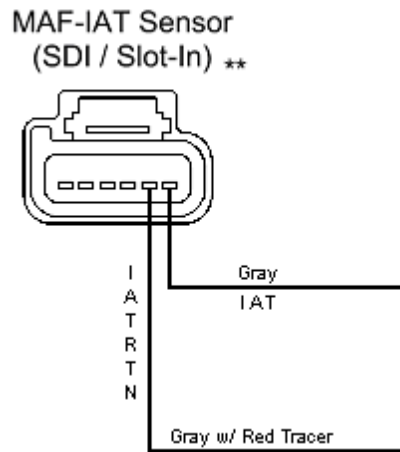
Modify MAF Plug And Hook Up IAT Sensor

GT's have their IAT sensor built into its MAF sensor. You don't want this. Set up like this the ECU will be seeing IAT readings before the supercharger. You want the ECU to see IAT readings after the supercharger/intercooler so they are accurate. To accomplish this you will be taking two wires from the MAF plug that are for the built in IAT sensor and re-routing them to your new IAT sensor in the top of the manifold. Here is what you are going to do.

Locate the 6-wire MAF sensor connector. Looking into the face of the connector with the release tab positioned up, the first two wires in the connector (IAT) from the right are grey and grey w/ red tracer. Cut both of these wires off at the plug. These two wires are the ones you will be running to your new IAT sensor in the manifold. This diagram may help.

Note*

2010 cars have different color wires on the MAF plug (not all of them the same). You still use the same two wires as the previous years though so it's no big deal. See diagram.



Now you will run the two wires that you cut off the plug to the IAT sensor pigtail/connector you purchased (Ford part #3U2Z-14S411-JZA) that plugs into the IAT sensor in the manifold. The sensor works “both directions” so you can connect the wires either way. Use similar or the same gauge wire as the stuff you are jumping into, make sure your connections are good, encase the wires in split-loom, etc and zip tie them to the existing harness so they will be neat, safe and out of the way.

If you need more information on this google it. Every single Mustang GT that gets a supercharger gets the same thing done. There is a TON of information out there.

Wire In Intercooler Pump

Wiring the IC pump is probably going to be the “hardest” thing you wire. But that does not mean it is hard. It's very basic if you understand how a relay works, why you use one, etc. Like a few other things there are a million and one ways of doing this. This section will outline what you are trying to accomplish and why. The execution, where you mount stuff, etc is up to you. Don't worry though, this is not rocket science.

The goal is to get your water pump to turn on when the car is running (key in the "run" position). You obviously don't want the pump running when the car is off because it will kill your battery. You could also add a switch on your dash, center consol, etc to turn the pump on and off but at no time do you want your pump off when the car is running so it is just a good idea to have the pump turn on every time the car starts. No extra switch needed.

Whenever wiring pumps, in this case a water pump, it's important to add a relay to the system. Failure to do so would cause excessive heat in the wiring and switch power/trigger and create a risk of failure/fire. This is caused by the amount of power being drawn by the high output pump. A relay works by using a switch (or switched power) to run low amperage 12 volts to the relay as a "signal". The relay acts as an electrical switch that activates and draws power straight from a good fused battery connection and sends it to the pump. The switched power/trigger never gets routed to the pump. Generally you'll have a larger gauge wire going to the pump than to the switched power/trigger because the pump pulls much greater power.

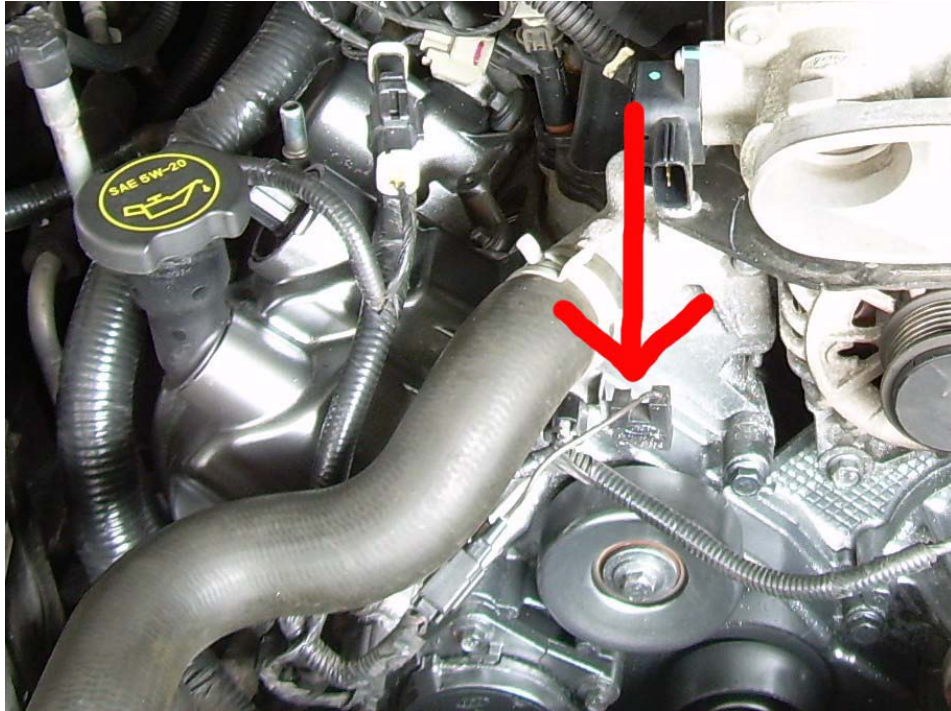
Why do I want to use a relay and do I really need to?

Anytime you want to switch a device which draws more current than is provided by an output of a switch or component you'll need to use a relay. The coil of an SPDT (Single Pole Double Throw) relay that is most commonly use draws very little current (less than 200 milliamps) and the amount of current that you can pass through a relay's common, normally closed, and normally open contacts will handle up to 30 or 40 amps. This allows you to switch devices such as pumps, fans, etc., with low amperage outputs such as most "key on" power sources. In some cases you may need to switch multiple things at the same time using one output. A single output connected to multiple relays will allow you to open continuity and/or close continuity simultaneously on multiple wires using only one low amp switch/trigger.

What Goes Where

-Using the relay/wiring diagram below, you can see that you will run a low amp switched power/trigger wire to #86 on the relay. There are a lot of places to get 12v keyed/switched power from. The easiest is to tap into the RF noise suppressor wire that is located on the PS front cover (pic below). You can also tap into places in the fuse box and the auxiliary fuse panel behind the passenger side kick panel (in the

interior). This wire will switch the relay, and by extension the pump, on/off.



-A heavier gauge (12ga recommended.) wire with an inline fuse will come off the battery or the hot post on your underhood fuse box (see pic below) and go to #30. This wire is the "high amp" power wire for the relay, and by extension the pump.



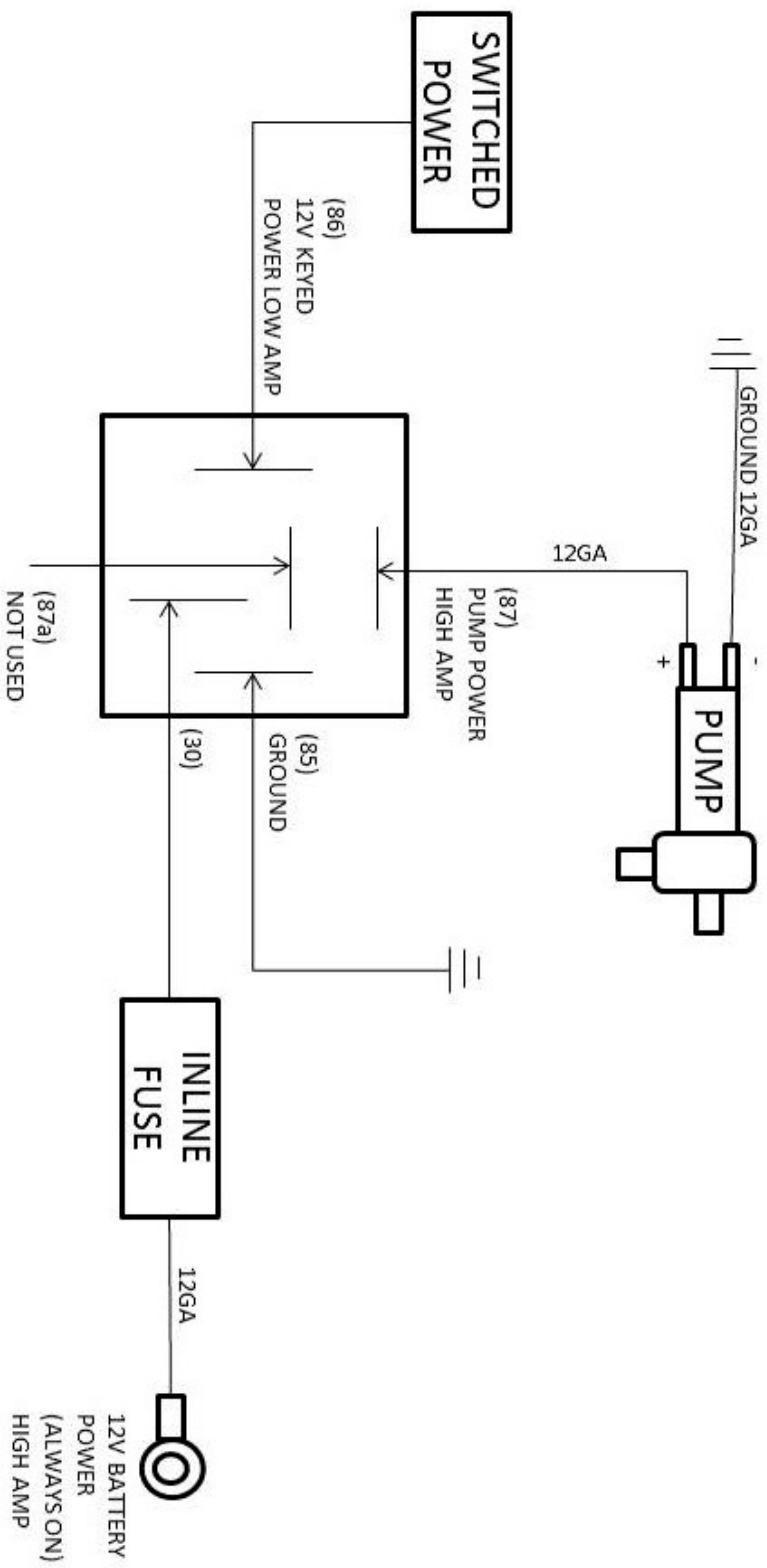
-#85 is run to a good ground. Ford LOVES grounds, they are all over the place! This grounds the relay.

-#87 goes to your pump. Use 12ga wire. This is the "high amp" power wire for the pump.

-If you have a #87A pinout you will not be using it. Cut the wire off or better yet pull the pin.

-The ground wire from the pump goes to, you guessed it, a ground.

Water Pump wiring/Relay Wiring Diagram



This concludes the electrical section. Check and double check your work, tie everything up nice and pretty and get ready, you're almost done.

Section 16

Fuel Pump

This section will be short and sweet. You will be putting in a Aeromotive 340lph pump in your car. The Aeromotive is dead simple, it is just like swapping the stock pump so you can get install info out of the many available online service manuals. Basically you remove the lower portion of back seat, pull the cover off of the pump hat, remove the stock pump, put the new pump in, put everything back together. It's very easy.

Section 17

Install Battery

Put the battery back in. Hook up the battery. Watch for smoke! If you really dorked the wiring up (especially the alternator cable) you may have a problem. Be ready to remove one of the battery cables.

OK, no smoke? Move on.

Section 18

Fluids

You are almost there. Now it is time to check/fill all of the fluids. It's not a bad idea to put the battery on a charger for this next part.

Intercooler system

The intercooler system takes the same fluid that your engine cooling system does, technically. And that is a 50/50 mix of water/antifreeze. That being said you can cheat the mixture so it has less antifreeze in it and it will cool better. Of course you will lose freeze protection though. You can also add products like Water Wetter for better cooling performance. We like to use a different color antifreeze in the intercooler system than the engine cooling system. If you do it this way and have a leak you at least know right away which system is leaking. In most of the cars we have a hand in we use the gold antifreeze in the engine cooling system and red antifreeze in the intercooler system.

Filling the intercooler system can be a bit tedious. It is sometimes hard to get it primed correctly and you are not exactly dealing with large passages. Start by filling the degas bottle. It will probably bleed down, you will fill it, it will bleed down, etc. When it won't bleed down anymore it is time to turn the pump on. BUT! Before you do that you want to disable the fuel pump(s) in case you have any leaks (you will check for leaks later). Either unplug the fuel pump(s), or remove a/the fuse(s). Now, without starting the car put the key in the run position, if you wired your pump right it will turn on. Is the coolant flowing through the degas bottle? If yes great, let it run for a few minutes until all the air is out of the system. If not seal your lips around the filler neck and pressurize the system with your mouth (no it doesn't taste good). Is it flowing through the degas bottle now? Good, let it run for a few minutes. If it is still not flowing make sure the system is routed correctly. If that is not the issue you may have to remove a line(s) to get the water moving, this gets messy. Do whatever you need to do to get the water flowing and all of the air out of the system.

Engine Cooling System

This should already be topped off. But check it anyway. If it's not, top it off. You won't be able to burp the system until you start the car.

Supercharger Oil

It's full? Right? Don't assume anything. Remove the fill plug on the front cover and check to see if it's full. Is it full? Ok, move on.

Engine Oil

But I didn't do anything with the engine oil?? Check it anyway.

Fuel Level

Make sure you have at least 5gal in the tank.

Blinker Fluid

Just kidding!

Section 19

Start and systems

check

Fuel System

You disabled the fuel system to bleed the intercooler system, remember. Now you reverse whatever you did so it will work.

Without starting the car put the key in the run position. The fuel pump(s) came on right? Every time you put the key in the "run" position it will prime the fuel system and bring it up to pressure. Do this a few times and check all of your fuel connections, even the injectors. Check everything again once the car is started. But don't start the car yet.

Engine Cooling System

The Engine Cooling System does not bleed itself completely while filling. You need to get the car running and hot enough for the thermostat to open (if the fan comes on the thermostat is open). After the car has been completely warmed up AND COOLS BACK DOWN, top off the coolant. But don't start the car yet.

Breaking The Belt In

Like brake pads or a good pair of boots the belt needs to be broken in correctly for best performance. If you do not break the belt in you risk belt slippage and a shorter belt life. To correctly break the belt in start the car and let it idle for about 5min (you can go over 5min). This 5min break in will get the belt up to temp. Once it is up to temp you want to let the belt sit until it is at room temperature. Once the belt cools back down the break in procedure is completed. If you have a spare belt (you should have one in your trunk as well as the tools to change it) break that one in too before storing it away. If you have to change belts on the side of the road or on the dyno you don't want to wait on the break in procedure. But don't start the car yet.

Now It's Time To Start The Car!

If you don't still have the car on a battery charger from when you bled the intercooler system, put it on one. The Mustang's computer is very sensitive to low voltage readings and they freak out from time to time.

Start the car.

The car should start right up, it doesn't know there is a blower on there, larger injectors, etc. It may hunt around for an idle for a bit, but it should stay running. If it stays running first check to be sure you have oil pressure on your gauge. Got pressure? Good, now get out of the car and observe the motor running. While the motor is warming up look at EVERYTHING! Any leaks? Shut it down. Crazy noises? (aside from the normal blower noise), Shut it down. If you did everything right you shouldn't have any trouble. The car will run just fine on the stock tune.

Warm the car up all the way, check everything 10 times, then shut her down.

If you had any problems it is time to go back through the instructions and make sure everything was done correctly.

Section 20 **Put Back Together**

You waited until now to put everything back together in case you had any problems. Finding out after you put the bumper cover back on that you had a small leak at the heat exchanger would suck! So the car is running right? Everything checks out right? No leaks right? Well put that sucker back together. You will know you are done when you run out of parts and fasteners.

Section 21

Tuning

You probably already know this, but you need a dyno "tune" to go with the blower. There are a couple of reasons that the kit does not have a tune that comes with it. First and foremost is that Department Of Boost does not condone the use of "canned" tunes with superchargers PERIOD. It is just way too risky. The first time the car gets into the boost you want it on a dyno. It can be the difference between buying a motor or not. The second reason is that if a tune was included a tuner would also. And since most people already have tuners, or don't want the junk ones that come with most supercharger kits it would be an added cost that most people don't want to pay. The third reason is that "canned" supercharger tunes are very, very safe. And therefore don't make good power. Every supercharger kit needs a custom dyno tune, even the ones that come with them. And lastly, you can drive the car (carefully) without a tune so you are not stuck getting trailered to the dyno.

The computer in the Mustang is very, very smart. Within reason it is "self tuning". This means that it will adjust itself to the changes you have made, within reason. What the computer can't do is cope with boost, it was never programmed to deal with anything like that. So the first rule of "driving with no tune" is NO BOOST! The second rule of "driving with no tune" is NO BOOST! If you do get in the boost the car will most likely go into limp home mode and fall on its face doing no damage. But there is a chance you could hurt something. So, NO BOOST! It is also a good idea to keep the RPM's down. Keep it under 3,000rpm and don't give it more than 20-25% throttle and you will be fine. People have driven their cars around for weeks like this. One customer drove his car 600mi to the dyno with no tune. Just don't do anything stupid.

If your car will not run and drive start looking for a non tune related problem. There is no guarantee that it isn't a tune issue, but it probably isn't. We have only come across one car that wouldn't run on the stock tune but that was because it was a full blown race car making ridiculous power, had HUGE injectors, aftermarket return style fuel system, a HUGE TB and MAF, cams.....and a stupid big blower.

Hopefully your tuner knows what they are doing. But even if they do you want to tell them to set your rev limiter at 6,000rpm and not to tune it to make over 450 rear wheel horsepower on a Dynojet dyno. You are not guaranteed to be 100% safe set up like this, but it's pretty close. If you choose to push the limits do it at your own peril.

Have fun!